THE RUBBER AGE AND TIRE NEWS

OCTOBER 25, 1920 VOL. VIII. NO. 2

Member of the Associated Business Papers, Inc.

INDEX TO CONTENTS

The Effect of Certain Accelerators Upon the Properties of Vulcanized Rubber II. 53
Vulcanizing Apparatus 56
The Rubber Industry in Sumatra and Malaya..... 58
Why the Big Executive is Interested in Safety..... 59
Plantations in the Dutch East Indies..... 60
Why Pneumatic Tires for Motor Trucks 61
The Present and Future of Safety in the Rubber Industry 63
Cut in Rubber Output Planned 64
Dutch Favor Production Cut 65
United States Consolidates Divisions 66
Many Changes in Akron 66
Elisha S. Williams Passes Away 66
Akron Stock Prices 66
News of the Rubber Association 67
News of the Mid-West Association 68
Exports of Rubber for August 69
MARKETS
Manufactured Rubber Goods 70
Cottons, Yarns and Fabrics 70
Chemicals and Compounding Materials 71
Crude Rubber 72
Scrap Rubber 73
Rubber Imports for September 73

THE GARDNER, MOFFAT COMPANY, Inc., *Publishers*
HIGHLAND, N. Y.
HARTFORD BUILDING, UNION SQUARE, 22 EAST SEVENTEENTH STREET, NEW YORK

SUBSCRIPTION PRICE: TWO DOLLARS PER YEAR. SINGLE COPIES TEN CENTS. CANADA, TWO AND A HALF DOLLARS PER YEAR. FOREIGN, THREE DOLLARS A YEAR.

COPYRIGHT 1920, BY THE GARDNER, MOFFAT COMPANY, INC.

ISSUED ON THE 10TH AND 25TH OF EACH MONTH. FORMS CLOSE FIVE DAYS PREVIOUSLY. ENTERED AS SECOND-CLASS MATTER JUNE 10, 1920, AT THE POST OFFICE AT HIGHLAND, N. Y., UNDER THE ACT OF MARCH 3, 1879.

TRENTON N.J., U.S.A. **ESSEX RUBBER COMPANY, Inc.** TRENTON N.J., U.S.A.

"ERCO" SOLES
"ESSEX" RUBBER HEELS
"TITE-EDGE" RUBBER HEELS

MOLDED SPECIALTIES

Trade Mark

AUTOMOBILE ACCESSORIES

INNER TUBES, CEMENTS, ETC.

MOLDED RUBBER GOODS

ANTIMONY
SULPHUR
MAGNESIA
ZINC OXIDE

1890 L.H.B.CO.

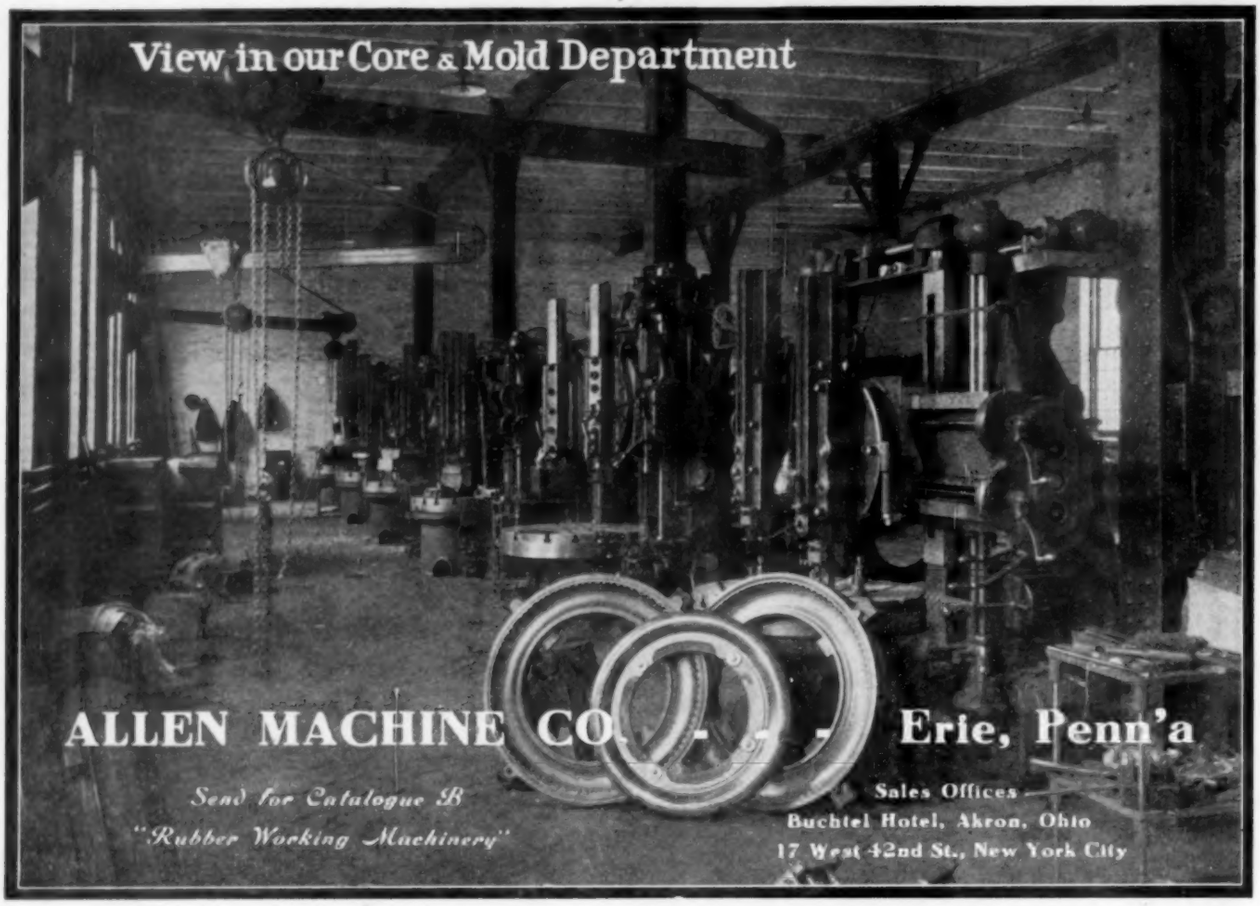
RED OXIDE
CARBON BLACK
FOSSIL FLOUR
LIME FLOUR

Large Emergency Stock Carried

L. H. **BUTCHER** CO., Inc.
ESTABLISHED AT SAN FRANCISCO 1890

Best of Shipping Facilities

NEW YORK SAN FRANCISCO LOS ANGELES SEATTLE AKRON


View in our Core & Mold Department
ALLEN MACHINE CO. - - - Erie, Penn'a
Send for Catalogue B
"Rubber Working Machinery"
Sales Offices
Buchtel Hotel, Akron, Ohio
17 West 42nd St., New York City

AMES
No. 3 RUBBER GAUGE

for

Speed and Accuracy

Instant Readings to .001″ or .01 mm.

Send for Catalog

B.C. AMES CO.
WALTHAM MASS. U.S.A.

L. D. GARDNER
PRESIDENT

W. D. MOFFAT
VICE-PRESIDENT

W. I. SEAMAN
TREASURER

THE
RUBBER AGE
AND TIRE NEWS

G. M. SANGSTER, JR.
MANAGING EDITOR

PETER P. PINTO
BUSINESS MANAGER

H. M. WILLIAMS
GENERAL MANAGER

VOL. VIII | OCTOBER 25, 1920 | No. 2

The Effect of Certain Accelerators Upon the Properties of Vulcanized Rubber--II[1]

By G. D. Kratz and A. H. Flower

The Falls Rubber Co., Cuyahoga Falls, Ohio

In a recent paper,[2] H. P. Stevens has given new figures, and from them made a number of deductions in regard to certain discrepancies between results obtained by the present authors[3] and earlier results obtained by him.[4] We do not entirely agree that these latest deductions will suffice for the complete coordination of his former results with ours. This view is confirmed by the repetition and amplification of our former experiments, including work with extra light instead of heavy calcined magnesia.

This work was carried out with a sample of the rubber previously employed and also with another rubber of similar physical appearance. Entirely different results were obtained with the two rubbers. In neither instance, however, was extra light magnesia found to develop greater activity than Accelerator A, and, in one case, it was markedly inferior to the latter. In both cases where Accelerator A was employed, the load required to effect a given extension led to erroneous conclusions, if used as a criterion of the rate of cure.

Difference in Results

As these results were obtained with accelerators of definite composition and purity, the differences may be attributed to variations existing in the rubbers themselves, and most probably in the nature, amount, or condition of the extraneous materials present. As a considerable portion of this extraneous matter was extractable with acetone, an investigation was made of the relative effect of the two accelerators upon the two rubbers after extraction. Since the nature of the substances removed by the extraction[5] was not studied, no attempt can be made to correlate the effect of the extra light magnesia with any definite one of the extraneous substances originally present in the rubber. Certain facts, however, have been well enough established to deserve brief consideration.

It was noted by Spence[6] that the nitrogen in rubber was not entirely of protein origin, and that nitrogenous bodies of well-defined alkaloidal character could be detected in the acetone extract of Para rubber. This was subsequently confirmed by Spence and Kratz[7] for plantation crepe (Hevea), although a difference in the character of the protein material in the two rubbers was found. Further, certain of their results indicated that in plantation Hevea the non-protein nitrogenous substance was not easily extractable with acetone. Dekkar[8] also noted the presence of nitrogen in the acetone extract, and gave figures for nitrogen distribution in the extracted rubber and its acetone extract which closely confirmed those originally obtained by Spence. Prior to Dekkar's observations, Beadle and Stevens[9] noted that the rate of vulcanization of certain rubbers decreased if the rubbers were previously extracted with acetone. After vulcanization the physical properties of the acetone-extracted samples were so greatly impaired, due either to the loss of the resin or the physical effect of the solvent upon the rubber, that the decrease in the rate of cure was considered of secondary importance.

It would therefore appear that the removal of the acetone-soluble nitrogenous constituent is responsible for the decrease in the rate of cure of the rubbers, rather than either of the causes originally assigned by Beadle and Stevens.[10] This is also in accordance with the later results of Eaton, Grantham and Day,[11] and of Stevens,[12] wherein the accelerating substance of plantation Heven rubber was found to be an organic base or mixture of bases, probably formed by the degradation of the protein portion of the nitrogenous material originally present in the rubber.[13]

The possibility that magnesia may hasten this degradation, with the formation of an accelerator similar to that produced by the biological decomposition of the proteins, has already been pointed out by Eaton[14] in commenting upon the patent of Esch.[15]

Decreasing Effect of Magnesia

In view of the well-known action of many synthetic organic accelerators in the presence of certain mineral oxides, such as that obtained by Cranor with zinc oxide, we are led to the conclusion that the effect of small amounts of magnesia in accelerating the vulcanization of rubber is of a secondary or contributory, rather than a primary nature, and consists largely in effecting a response from the natural accelerator in the rubber. This finds further confirmation in the observation of Stevens in his previous paper, wherein he pointed out that the accelerating effect of extra light magnesia decreases when a sulphur coefficient of 2.0 to 2.5 has been attained. At this point, increased amounts of magnesia would have no effect, as they would be in excess of the amount required by the natural accelerator, which is present in the same definite and limited amount in all of the mixtures.[1]

---

[1] Presented at the 59th Meeting of the American Chemical Society, St. Louis, Mo., April 12 to 16, 1920. Courtesy *Journal of Industrial and Engineering Chemistry*.

[2] *India Rubber J.*, 58 (1919), 527.

[3] *Chem. and Met. Eng.*, 20 (1919), 417.

[4] *J. Soc. Chem. Ind.*, 37 (1918), 156*t*.

[5] A qualitative determination showed the presence of nitrogen in the extracts of both rubbers.

[6] Herbert Wright, "*Hevea Bras.*, or Para Rubber," 1912, p. 439. London.

[7] *Kolloid-Z.*, 14 (1914), 268.

[8] Comm. of the Neth. Govt. Inst. for Advising the Rubber Trade and Rubber Industry, Part II, p. 55.

[9] *Intern. Congr. Appl. Chem.*, 25 (1912), 581.

[10] In a previous paper [THIS JOURNAL, 12 (1920), 317], we have mentioned that results obtained with certain synthetic organic substances indicate, in some cases, that the accelerator may be closely bound to the rubber. Should this also be found true in the case of the natural accelerator, the removal of this substance by extraction would markedly impair the physical properties of the sample after vulcanization, as well as slow down the rate of cure. (Compare with footnote, p. 974.)

[11] "Variability in Plantation Rubber," *J. Soc. Chem. Ind.*, 35 (1916), 715.

[12] *J. Soc. Chem. Ind.*, 36 (1917), 365.

[13] The protein portion of this nitrogenous material which is insoluble in acetone and benzene has been shown to act as an accelerator (Beadle and Stevens, *Kolloid-Z.*, 11 (1912), 61; 12 (1913), 46; 14 (1914), 91). It has the further advantage of being present in relatively large amount as compared with the acetone-soluble constituent. As it does not, however, respond to magnesia to the same extent as the latter substance, and as certain results (not included in this paper) indicate that the extraction with acetone does not cause a market degradation of this protein material into the soluble variety, we have not made reference to it.

[14] *Agr. Bull. Federated Malay States*, 5 (1915), 38.

[15] Ger. Patent 273,482 (Nov. 22, 1912)

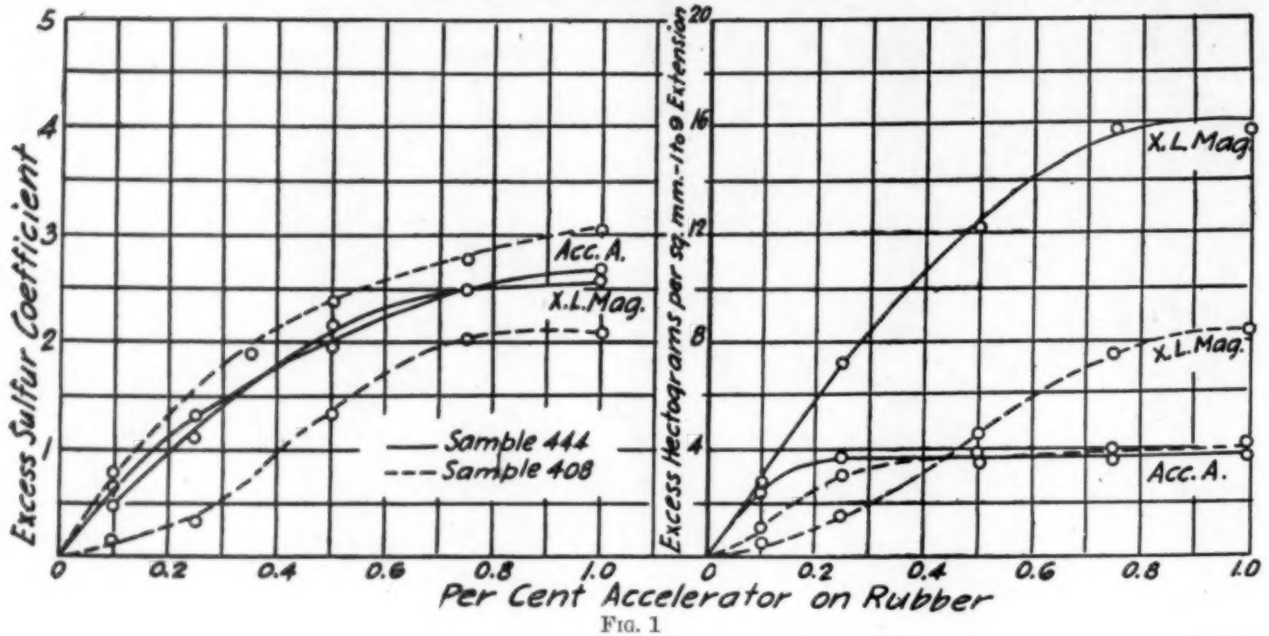


FIG. 1

The same would not be true for Accelerator A, which is regarded as a primary accelerator and is present in the various mixtures in increasing amounts up to 1 per cent of the rubber.

In conclusion, we wish to draw a distinction between the terms "effect of accelerators" and "action of accelerators." This paper deals primarily with the effect produced by certain accelerators upon the sulphur coefficient and the physical properties of the rubber after vulcanization. The action of these accelerators, *per se*, is another problem entirely. We are convinced, however, that in many instances both the action and effect of organic accelerators is dependent in great extent upon the presence of certain mineral substances in the mixture.

Experimental Part

The experimental procedure was similar in all respects to that of our former experiments. Essentially it differs from that of Stevens only in the method of vulcanizing, and in the substitution of straight pieces for physical tests in place of the rings employed by him. The relative effects of vulcanization in steam and in a platen press are commented upon later.

Two samples of thin, pale, first latex crepe (Hevea) were used. Sample 408 was from the lot of rubber that was used in our former experiments, while Sample 444 was chosen from another lot of equally good appearance, which was found to have different chemical and physical characteristics when employed in factory mixtures.

A partial analysis of the two rubbers gave the following results. No great importance, however, is attached to the figures for total nitrogen.

	No. 408 Per cent	No. 444 Per cent
Total Ash	0.26	0.29
Acetone Extract	2.62	2.99
Total Nitrogen	0.19	0.20

[1] It is interesting to note that Dekkar's figures for the nitrogen in the acetone extract of Hevea crepe (when calculated on a protein basis) are very close to the amounts of the accelerators employed in these experiments.

[2] In collaboration with Bernard J. Shapiro.

[3] *India Rubber World*, 61 1920, 356.

[4] *Chemist-Analyst*, 15 (1916), 4.

[5] Stevens in his first paper on this subject has mentioned the possibility of a difference in the rate of cure of accelerated mixtures when vulcanized in dry heat. We have found similar mixtures which contained magnesia to show increasingly large sulphur coefficients when vulcanized, respectively, in dry heat, platen press, and open steam. This was not found to be true, however, for mixtures which contained organic accelerators. With the latter, results obtained in a platen press were frequently higher than those obtained in open steam. Evidently many organic accelerators are partially soluble in, or volatile with steam and, consequently, results obtained with these substances in open steam are apt to be low. This point is of considerable importances, and accounts in large part for the difference in the results obtained by Stevens and ourselves. We have found that most uniform results are obtained with samples encased in molds and vulcanized in open steam.

[6] The results obtained and shown in this table are somewhat higher than those originally found, and which were given in Table I of our former paper. This discrepancy may be attributed to a change in the rubber itself, as the sample used in the present instance had aged for over one year in roll form in a partially broken-down condition before the experiment was repeated. Also, the method previously employed for the estimation of combined sulphur was found to give slightly low results for mixtures which contained but small amounts of mineral substances.

The extra light magnesia (sp. gr. 3.45) was the best grade obtainable. It lost 4.00 per cent on ignition, after which it contained 93.67 per cent *MgO*. Accelerator A was prepared by the condensation of an amine with formaldehyde and was C. P. grade.

The conditions of milling and making physical tests were identical with those previously employed, but, as comparisons were made after the method of Stevens, the physical properties of the different mixtures at break have been omitted.

Sulphur determinations were made by our method[3] in place of that of Rosenstein-Davies.[4] The coefficients represent the combined sulphur of vulcanization expressed as a percentage of the rubber in the mixture.

Throughout the work all cures were made in a platen press of the usual type. Stevens' samples were wrapped with cloth and vulcanized in steam.[5]

Experiment I

This work consisted virtually of a repetition of the previous work, using the sample of rubber (No. 408) previously employed, but substituting extra light magnesia for the heavy calcined material used in our former experiments. The results are given in detail in Table I[6], and the relation between sulphur coefficients and the amounts of accelerator is shown graphically in Fig. 1. The relation between the amount of accelerator and the load required to effect a given extension is also shown in Fig. 1. In both cases these results confirm previous ones, even to the shape of the curves themselves. As has already been stated, if accelerators (such as our Accelerator A) are present in the mixture even in small amount ,it is evident that the load required to effect a given extension is not a measure of the physical properties of the mixture, nor is it a reliable criterion of the rate of cure of the vulcanized mixtures.

TABLE I—TESTS ON RUBBER NO. 408

Accelerator	Accelerator Per cent	Sulphur Coefficient		Load in Hectograms per Sq. Mm. to Effect Extension: 1 to 7		1 to 8		1 to 9	
		Actual	Excess	Actual	Excess	Actual	Excess	Actual	Excess
Extra Light Magnesia	Control	0.580	...	0.34	...	0.42	...	0.50	...
	0.10	0.704	0.124	0.58	0.24	0.74	0.32	0.94	0.44
	0.25	0.916	0.336	1.03	0.69	1.37	0.95	1.98	1.48
	0.50	1.874	1,294	2.09	1.65	3.20	2.78	5.11	4.61
	0.75	2.553	1.973	3.03	2.69	4.84	4.42	8.17	7.65
	1.00	2.599	2.019	3.21	2.87	5.17	4.75	8.92	8.42
Accelerator	Control	0.580	...	0.34	...	0.42	...	0.50	...
	0.10	1.356	0.776	0.88	0.54	1.10	0.68	1.61	1.11
	0.25	1.987	1.407	1.70	1.36	2.25	1.83	3.57	3.07
	0.50	2.925	2.345	2.14	1.80	2.77	2.35	4.23	3.73
	0.75	3.309	2.729	2.16	1.82	2.72	2.30	4.32	3.82
	1.00	3.603	3.023	2.30	1.96	2.98	2.56	4.81	4.31

Experiment II

This consisted of a repetition of Expt. I upon Sample 444. The results are given in Table II, and the relation between sulphur coefficients and the amount of accelerator, and between

the amount of accelerator and the load required to effect a given extension are shown in Fig. 1. On the basis of the sulphur coefficient, Accelerator A and extra light magnesia appear to be of almost equal activity; or, conversely, Sample 444 vulcanizes at the same rate with either accelerator. When judged by the load required to effect a given extension, however, extra light magnesia appears to be much more active. As it is now almost generally conceded that sulphur coefficients afford the most reliable indication of the state of cure, the load required to effect a given extension is again seen to be unreliable as an indicaton of the rate of cure of accelerated mixtures. These results have strengthened our former opinion that, unless a complete series of stress-strain measurements are made, when the results of physical tests are taken as measure of the rate or state of cure of accelerated mixtures, such measurements must be made at or near the point of break of the respective mixtures. The effect of such small amounts of accelerators on the elongation of vulcanized mixtures has already been commented upon in our previous article. In contradistincton to Stevens' view, we do not regard the composition of a mixture as fixed when different accelerators are used, even if they are employed in amount less than 1 per cent of the rubber.

TABLE II—TESTS ON RUBBER NO. 444

Accelerator	Accelerator Per cent	Sulphur Coefficient		Load in Hectograms per Sq. Mm. to Effect Extension					
				1 to 7		1 to 8		1 to 9	
		Actual	Excess	Actual	Excess	Actual	Excess	Actual	Excess
Extra Light Magnesia	Control	1.009	...	0.53	...	0.67	...	0.78	...
	0.10	1.482	0.473	1.55	1.02	2.08	1.41	3.44	2.66
	0.25	2.117	1.108	2.75	2.22	4.42	3.75	8.01	7.23
	0.50	3.132	2.123	3.88	3.35	7.09	6.42	13.08	12.30
	0.75	3.440	2.431	5.11	4.58	8.97	8.30	16.65	15.87
	1.00	3.552	2.543	5.14	4.61	8.37	7.70	16.69	15.91
Accelerator A	Control	1.009	...	0.53	...	0.67	...	0.78	...
	0.10	1.678	0.669	1.49	0.96	2.04	1.37	3.21	2.43
	0.25	2.317	1.308	1.95	1.42	2.53	1.86	4.41	3.63
	0.50	2.938	1.929	2.20	1.67	3.05	2.38	4.62	3.84
	0.75	3.437	2.428	2.16	1.63	2.83	2.16	4.33	3.55
	1.00	3.685	2.676	2.40	1.87	3.19	2.52	4.64	3.86

In his second communication, Stevens has drawn attention to the relationship between the coefficient of vulcanization and the load at a given extension. Our present results, for Samples 408 and 444, expressed in the same manner, are shown graphically in Fig. 2. It is at once evident in both cases that they differ markedly from the results obtained by Stevens. In the case of the mixtures which contained magnesia, the curves for both rubbers are practically straight lines up to coefficients of about 2.0 to 2.5, and, as Stevens has already noted, the excess load required to effect a given extension affords a fair measure of the rate of cure. In the case of Accelerator A, however, these curves are not straight lines, which shows that the load required to effect a given extension is not a measure of the rate of cure, as indicated by sulphur coefficients. Evidently, both rubbers vulcanize at almost the same rate when this accelerator is employed.

Both Stevens' and our own results are subject to the same interpretation. Our Accelerator A has been shown to decrease the load required to effect a given extension, *i. e.*, has increased elongation as compared with extra light magnesia. It is quite possible, however, that Stevens' Accelerator I induced a greater resistance to extension under a given load than our Accelerator A. Furthermore, it is not entirely out of the question to select an organic accelerator which would actually increase the resistance to extension to more than that obtained with a similar quantity of extra light magnesia.

Experiment III

A comparison was made of the results obtained with the two rubbers before and after extraction with acetone.

A 10-g. sample of the rubber was sheeted thin and extracted with acetone in a Soxhlet apparatus for thirty-six hours. At the end of this time, the sample was dried *in vacuo* to constant weight and re-sheeted. The mixture was made by carefully sieving the required amount of sulphur and accelerator into the sheeted rubber and then rolling into a cylinder. The sample thus prepared was squeezed betwen the rolls of the mill to press the ingredients into the rubber without loss of either sulphur or accelerator. Subsequently, it was thoroughly mixed by re-sheeting and re-rolling until a homogeneous mix was obtained. After the samples had been allowed to age for twenty-four hours they were vulcanized in a button mold in the platen press and the combined sulphur estimated in the usual manner. Owing to the small size of the samples,[1] no physical tests were made.

The results of this experiment are shown in tabular form in Table III. It is seen that, despite the small size of the samples employed, the results obtained with the unextracted rubbers are in good accord with those previously found for similar

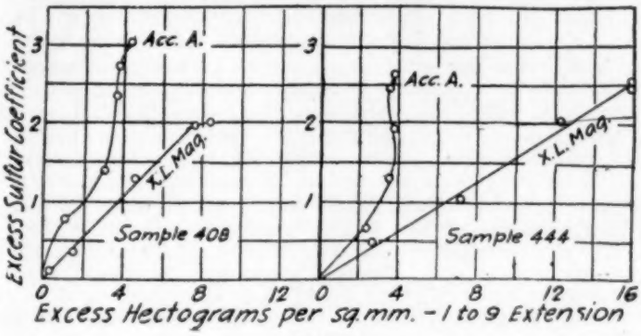


FIG. 2

quantities of the accelerator (Tables I and II). In the case of the extracted rubbers, however, this was not true.

TABLE III

	Sample 408				Sample 444			
	Unextracted Rubber		Extracted Rubber (Ext. 36 Hrs.) Acetone Ext. = 2.62		Unextracted Rubber		Extracted Rubber (Ext. 36 Hrs.) Acetone Ext. = 2.99	
	Sulphur Coefficient	Excess Coefficient	Sulphur Coefficient	Excess Coefficient	Sulphur Coefficient	Excess Coefficient	Sulphur Coefficient	Excess Coefficient
Control ...	0.580	...	0.831	...	1.009	...	1.000	...
Extra Light Magnesia, 0.5 Per cent	1.874	1.294	1.290	0.459	3.132	2.123	1.343	0.343
Accelerator A 0.5 Per cent	2.925	2.345	3.204	2.373	2.938	1.929	3,424	2,424

After extraction with acetone and vulcanization with the assistance of Accelerator A, Samples 408 and 444 were both found to have approximately (slightly higher) the same sulphur coefficients as were obtained with the unextracted rubbers, which have already been shown to be almost equal to each other. The extracted samples which were vulcanized with the assistance of extra light magnesia, however, gave entirely different results. Although the unextracted samples had sulphur coefficients of 1.874 and 3.132, respectively, the same mixtures, when prepared with acetone-extracted rubbers, had approximately the same sulphur coefficient, 1.3.

It would appear that Sample 444 differed from Sample 408 quite markedly in the nature or condition of its acetone-extractable components. Although we recognize that the extraction with acetone may not be without effect upon the rubber, or upon the extraneous substances left in the rubber, it would appear that, if the acetone-solnble substances are removed, not only is the response of the two rubbers to the accelerating influence of extra light magnesia decreased in both instances, but also the excess sulphur coefficients obtained are small and almost equal. The excess coefficients obtained were, indeed, so little above their controls that it would appear that a more complete removal of these extraneous substances would prove extra light magnesia to be almost inactive as an accelerator. As Accelerator A functions equally well with both rubbers, either before or after extraction, when judged on the basis of the sulphur coefficients obtained, the results obtained with it require no further comment.

In view of the above experimental results, we are warranted in drawing the following conclusions:

I—The activity of small amounts of magnesia as an accelerator is largely of a secondary or contributory character, and acts in conjunction with, or obtains a response from, certain extraneous substances (probably nitrogenous) present in the rubber.

II—The activity of small amounts of magnesia is limited by the amount and nature of these extraneous substances originally present in the rubber.

[1] It was obvious that the physical properties of the control mixture and the mixture which contained magnesia were very inferior to similar mixtures of unextracted rubber. This was not true, however, for the mixture which contained Accelerator A; the physical properties of this mixture were good and not greatly below a similar mixture prepared from unextracted rubber.

Vulcanizing Apparatus

By Frank Scott

Supervisor of Inspections, Safety Department, Hamlin & Co., New York City

Vulcanizing is the act or process of treating rubber with some form of sulphur to affect certain changes in its properties as to render it insensible to atmospheric changes, increasing its durability and adapting it for various purposes. Since the process of vulcanization was patented by Charles Goodyear in 1844, pure India rubber has been very rarely used, the vulcanized rubber being far preferable for almost every use. In general, the process of vulcanization consists in mechanically mixing rubber at moderate heat with sulphur, which is the only essential ingredient necessary, although other materials are often added at the same time, such as silicate of magnesium, carbonate of lead, asphalt and tar, each of which imparts a different quality to the product. After the sulphur and other ingredients are added, the curing takes place in sealed vulcanizers generally by heat from steam at 250 to 300 degrees Fahrenheit. The substance thus formed acquires extraordinary powers of resisting compression together with a great increase of strength and elasticity, and cannot be dissolved by ordinary solvents. By using a greater proportion of sulphur and a higher temperature, hard rubber known as "vulcanite" or "ebonite" is produced.

Vulcanizing Apparatus

Vulcanizing apparatus is made in numerous forms; long horizontal cylinders, vertical cylinders with hydraulic ram pressure plus steam pressure, pot heaters, special cast-iron castings of various forms for vulcanizing and repairing tires, platen presses of various sizes and shapes for belts, etc., but the types most generally used are the large horizontal cylindrical ones. Although in the tire industry, the vertical presses, having a hydraulic ram, are used in great numbers, also.

The horizontal cylindrical vulcanizers run in standard sizes from 12 inches to 84 inches in diameter, and are usually about 20 feet long. For some purposes, they are made considerably longer. The construction of these should consist of shell plates, butt straps and heads of open hearth fire box steel or of open hearth flange steel having a tensile strength of not less than 55,000 pounds nor more than 65,000 pounds per square inch of cross section; the rivets to be of boiler rivet steel with a tensile strength of not less than 45,000 pounds nor more than 55,000 pounds per square inch of cross section. The flanges and doors should be of cast steel, conforming to all of the requirements of the Boiler Code of the American Society of Mechanical Engineers for Class "5" steel, castings soft grade. The doors should be hinged and provided with rollers, so as to support the weight of the doors when open. They are usually held shut by means of bolts, although there are a number of different types of quick opening and closing doors on the market, all of which are not approved by insurance companies. It is advisable when insurance of the vessels is to be considered that the approval of the insurance company be obtained before the equipment is purchased. On this type of vulcanizer, the utmost care be taken in setting up the equipment, in vessels longer than 5 feet, to have it supported on the tail end by a saddle, fitting the shell with plain surfaces at each end to bear on turning metal roller which would lay between the finished guides and a sub-base. All intermediate saddles on long vulcanizers should also be this way, so that a shell when contracting and expanding would roll longitudinally instead of the shell scraping and cutting itself, which is a very important feature on account of the great amount of contraction and expansion that takes place, due to the rapid heating and cooling of the vessel. The vessels should also be so set as to drain to steam traps which are essential to remove condensation. It is necessary to eliminate all possible water traps to prevent injury to the vessel by corrosion.

The utmost care should be taken on the part of the foreman to see that employes properly tighten up *all* bolts on doors, and in doing this, to use a wrench of suitable length to enable them to do the work properly without injury to threads on bolts, which is often done by the use of pipes on wrenches, thus weakening the bolts and causing serious trouble. Emphasis should be made on the fact that *all* bolts should be tightened, and it should be instilled in the minds of all those having any connection with the vulcanizing equipment that all vulcanizers are subject to an internal pressure by means of steam, a highly dangerous element unless handled properly. A high temperature of steam together with its terrific expansion, I believe to be second only to explosives. On account of its general use, the danger is ignored, and in the case of most operations, they are ignorant as to the possibilities of serious accidents which are likely to be caused by not manipulating the equipment as it should be.

It is all important that the element of danger from improper handling be forcefully called to the attention of the foremen and workmen, and that care be taken to see that they perform their duties, in connection with the handling of this equipment, in a safe manner. They should be thoroughly instructed, particularly with reference to the question of bolting the doors, opening the vents (which should be at least one inch) when the steam gauge shows no pressure after the steam is shut off, and not attempting to open the doors until it is definitely known that the pressure has been relieved. Also, they should be instructed not to depend on the reading of the gauge, as it is possible that it may not show a proper reading.

Reading of the Gauge

Many cases are known where men have been injured by depending on the gauge which was incorrect, and releasing the fastenings in the door without first opening the vent, with the result that the door blew open with serious results.

Safety Chains

Safety chains should be kept in place until it is absolutely known that the pressure is entirely relieved are sometimes used on doors.

Drainage

Another source of trouble in connection with the horizontal type of vulcanizer, from an accident point of view, is improper drainage. In a number of cases when the doors have been opened, men have had their feet scalded, or when the water is trapped in the vulcanizer, men have gone in and have been burned. This is a condition that should be watched carefully.

Elimination of Steam

In some cases in order to eliminate the steam from the vulcanizing rooms, the vulcanizers are connected to a suction pipe and a valve on the back of the vulcanizer opened, and the section in the suction pipe thus exhausts the steam. This can be condensed and water saved. The feature, however, is the elimination of steam from the work room. This same method can be applied to the vertical type of vulcanizer.

Safety Valves

Every vulcanizer, regardless of the type of apparatus, should be provided with a safety valve on the vessel side of the steam connection. This would bring it between the reducing valve and the vulcanizer. The safety valve should be set at the minimum pressure permissable with which to accomplish to desired results in the equipment. All valves should be tested daily, and at least every six months by allowing the pressure to raise in the vulcanizer until the valve pops itself. Care, however, should be taken to see that the gauge used at the time is correct, and that the allowable working pressure is not exceeded on the vessel. It is always advisable to have the safety valve set for at least five pounds pressure under the allowable pressure. Of course, if a vessel is allowed 100 pounds pressure and only sixty pounds pressure is required to accomplish the results, the valve should be set as

Delivered before Rubber Section at the Ninth Annual Safety Congress of the National Safety Council at Milwaukee, Wisconsin, September 30, 1920.

close to sixty pounds as is feasible. Safety valves should be in size equal in area to the size of the supply line to the equipment.

Insuring Vulcanizers

It is my opinion that vulcanizers should be insured, so as to receive the benefit of inspections by men specializing in this work. In connection with this question of insuring vulcanizers, it is advisable that before vessels are purchased, the approval of the insurance company be obtained, or that there be a stipulation in the contract that the vessel will meet the requirements of the steam boiler insurance companies. Some of these companies have very strict rules as regards requirements for vulcanizers, especially of this horizontal type and, of course, the Boiler Code of the American Society of Mechanical Engineers should be followed in construction.

Numbering Vulcanizers

All vulcanizers should be numbered, and when once given a number, it should be maintained during the life of the equipment, so that their records can be kept without any question, which is a very important matter.

Inspections

Regular inspections should be made by men properly qualified to judge conditions correctly, and a careful record kept of inspections. This record should be checked periodically to see that inspections are made and the recommendations complied with promptly.

Vertical Shell Vulcanizers

Vertical shell vulcanizers of the French press type used generally in the manufacture of automobile tires, are constructed along the same general lines as the horizontal vulcanizers, with the exception that they are heavier to withstand the hydraulic ram press plus the steam pressure. Care should be taken not to use a type of press of this kind which would permit the water pressure going into the cylinder. I understand that this type is practically obsolete at the present time.

Tire Vulcanizers

Tire vulcanizers for small repair shops are usually of cast-iron and are generally in the hands of persons inexperienced in the handling of steam equipment. Consequently, the element of danger is not appreciated or known. Therefore, the utmost care should be taken to have those using equipment of this kind instructed as to the possibilities of serious trouble that may result from improper handling. The vessels in all cases should be equipped with safety valves set at the lowest minimum pressure necessary to perform the work. It has come to my personal attention that in small equipment of this kind in branch stores, the spring loaded safety valves have been so set that they were nothing more than plugs. In another case, I found an equipment in a branch store where there was a lever safety valve loaded with extra weights so as to make it practically useless as a safety valve.

To generalize in connection with vulcanizers, there are a number of points that should be considered:

First: In many of the rubber plants of today, they continue to operate vulcanizers anywhere from twenty-five to fifty years of age. These not infrequently, are equipped with all kinds of attachments and other items making internal inspection difficult, and with their entire exterior completely covered with insulating material, precluding any possibility of external inspection. For years, they have alternately been heated and cooled, and why more of them do not explode under pressure due to metal fatigue is a question.

Second: A great many of these old vulcanizers were built by rule of thumb by handy-men (master mechanics of the old days). The doors, hinges, hinge pins, swing bolts and pins for the latter together with the lugs for holding the pins on these old vulcanizers are all items under stress, and in every case, should be given a most careful scrutiny by a man who knows what he is doing. Such items in a vulcanizer are very like the different items in a building structure where the floor is good for not more than twenty-five pounds live load per square foot, with the flooring or the columns, or, a combination of all members, lacking one, would be good for 200 or 300 pounds per square foot. The whole structure, whether building or vulcanizer is only as strong as the weakest member.

Third: Every vulcanizer in a rubber plant, after being inspected and figures, should have been set against it with the usual factor of safety (at least five) the maximum working pressure. This figure should be determined and given to the owner without regard to what they may want. Where the examination proves that the vessel is not in a safe condition to be operated at the pressure required to do the work, it should be replaced by a vessel that is of safe construction. It would be advisable in all states to have a law, making it compulsory, where vessels are found unsafe, to have such conditions reported to the state authorities for the enforcement of the discontinuance of their use, where necessary.

Fourth: Vulcanizers are occasionally removed from one part of a plant to another, and two things are liable to happen. First, in skidding or lowering and raising them, more weight is handled than is shown by the gang, and serious accidents are likely to occur by the failing of tackle or the carelessness of the men. The other point concerns the safety of the vulcanizer itself. In falling or even in moving it, the plates, rivets, heads or castings, long subjected to metal fatigue might easily be ruptured.

Summarizing Safety Features

First: Cast-iron should not be used on large vulcanizers. Where castings are necessary, they should be of steel.

Second: Vulcanizers should be built according to the American Society of Mechanical Engineer's Boiler Code. This means of tested material. They should be subject to hydraulic test of one and one-half times their safe working pressure before placed in service.

Third: All vulcanizers should be regularly inspected by specialists on boiler inspection.

Fourth: They should be properly set so as to allow contraction and expansion to eliminate undue wear or strain.

Fifth: All vulcanizers including belt presses and platen presses should have safety valves between the reducing valve and the connections, the size of the relief to be governed by the size of the steam inlet connection.

Sixth: Employes should be thoroughly instructed as to the proper use of the equipment and the hazards due to improper use.

Seventh: All vulcanizers should be properly drained so as to eliminate the possibility of injury due to burns. In this connection, it is advisable with vulcanizing equipment and other steam pipes to place coverings where possible, so as to eliminate accidents caused by contact with the hot steam pipes.

Eighth: The men should be thoroughly instructed to fasten all bolts securely in vulcanizer doors, and not to open them until it is absolutely known that the pressure has been entirely relieved. The check on this as described above, when the gauge shows no pressure, open the vent pipe which should show the true condition.

Ninth: Wrenches should be of suitable length to fasten bolts on vulcanizers without using pipe on the wrenches which causes unnecessary strain on the bolts. The use of pipes is common practice and should be avoided.

Tenth: Protection should be placed in the vulcanizers to prevent cars from striking the heads, as continual bumping is liable to cause injury to the vessels.

Eleventh: Special attention should be paid to the drainage of vulcanizers and efficient traps of ample size should be used.

Twelfth: Care should be taken to properly fasten loading tracks. The wheels of truck carriers should be checked, so that in loading the heater, the possibility of upsetting the load will be overcome.

Thirteenth: Where track bridges are used to run cars from the floor level to the heater, these should be counterweighted with weights under the floor. This would make the bridges secure when in use, and eliminate the tripping hazard when they are out of service.

Fourteenth: Where CO_2 vulcanizing apparatus is used, special attention should be given to the fact that this gas is very dangerous and the following precautions should be observed:

First: Do not let the CO_2 drums drop.

Second: Keep caps on tops of drums when charging.

Third: When charging CO_2 tank, see that the valves between CO_2 drums and tank are open before valve on top of CO_2 drum is opened.

(Continued on page 58)

The Rubber Industry In Sumatra and Malaya

By C. D. Rockwood

Purchasing Agent, Mason Tire and Rubber Co., Kent Ohio

(*Continued from issue of September 25, 1920*)

Every indication points to an acute rubber shortage within the next two or three years. There are, however, a few planters who are of the opinion that when all the newly planted areas and new concessions are brought into bearing that there will be an over production of rubber. The majority of planters, however, favor the opinion that there will be a big shortage of crude rubber in the next few years.

From our observation and knowledge of the tire industry at home, we are very much inclined to favor the "bulls" and when it is considered that during the year 1919 the United States Rubber produced on their plantation 11,000,000 lbs. of rubber, on the 35,000 acres, which was only fifteen per cent of their requirements, and their applications for so vast areas of new land, together with Goodyear doing the same and the Dunlop Rubber Co., buying up practically every producing plantation they can find, which is of any account, it is not hard to foresee an acute rubber shortage in the next two or three years.

Visible Stocks of Crude Rubber

There are no figures available to show just how much rubber is held in stock in the Singapore market, but from the difficulty being experienced in picking up any large quantity of rubber at a time, and the following figures given out by the Chamber of Commerce April 23rd at the "Rubber Auction," it does not appear that there is any great quantity on hand:

Catalogued	1095.60 tons.
Offered for Sale	837.19 tons.
Sold	56.84 tons.

Much rubber never reaches the market at all, being sold at private sales and by agents direct from the estates.

We understand that recently there have been large stocks of rubber dumped on the London market by the Dutch, who had been holding the rubber for the Germans, but owing to Germany's financial condition at the present time, have not been able to deliver it to them. It was these stocks of rubber which forced the London market down, and the market here is down to a price equal to 44.5 cents New York.

English and Dutch Coin

The Dutch guilder is the coin used in Sumatra, and its value normally, in relation to the gold, or United States dollar, is forty cents. At present it is slightly depreciated, the rate being about 2.75 to the dollar.

The Straits dollar is the medium of exchange in Singapore and the Malay Peninsula. All payments must be made in Straits currency. The normal value of the Straits dollar in relation to the United States dollar is fifty-six cents, but at the present moment it is depreciated to the exact extent of the pound sterling. This is occasioned by the fact that the British in order to maintain a parity of exchange in the colony placed the normal value of the Straits dollar at $8.30 to the pound sterling.

English vs. Dutch

There is undoubtedly a feeling of aversion to the Dutch, prevalent among the English as well as the American planters, and in every case where English assistants are working under Dutch managers there is more or less friction. The same is true in the case of the Americans. This feeling is fundamentally a racial one but little unpleasantnesses are continually cropping out and only serve to aggravate it.

We cannot say that we were treated in any but the most courteous manner by the Dutch officials and planters, with whom we came in contact, and were it not for the fact that we heard continual expressions of dislike for the Dutch, we could do no other than commend them highly.

From "The Mason Mail"

During the war, the Dutch were so strongly pro-German and as a nation are so closely akin to the German, that this also has a bearing on the present situation.

Until very recently the wages of assistant managers on the estates in Sumatra have been so very low that it was necessary to take some steps to enable these men to meet the constantly increasing costs of living. 250 guilders per month, or $100 United States, was the average salary, which included a house and one servant, also a horse. The Goodyear T. & R. Co. was the first to change the situation by making the minimum salary 350 guilders or $140 per month, and increasing gradually to 600 guilders, $240 per month, at the eight year.

Manager's Salaries

Managers salaries are figured on many different bases, though the most common being a flat salary of $400 to $600 per month, including a home, servants and motorcar, in addition to which a bonus or commission is paid at the end of the year, based on the profits. In some cases this amounts to five per cent of the gross profits and in others to five or ten per cent of the net. The salary of the chief executive on one of the very largest estates is quoted at $60,000 per year. This of course, could not be verified, but based on the profits of many of the estates it is entirely within reason.

Storage Space

Singapore is the main port of exportation for rubber and by far the largest portion of the rubber grown in these countries is shipped to this port for trans-shipment to America and England. The rubber as it comes to the market is not ready for shipment, and must all be baled or boxed and properly prepared for export, in addition, it is not always possible to make immediate shipments of all rubber received on account of cargo space, although the shipping companies are at this writing able to take care of all the rubber offered, and for these reasons, ample storage space must be available to care properly for the rubber purchased until it is convenient to load it into the ship. There is a very acute shortage of godown space in Singapore, due to cessation of building during the war and the great increasing demand since the war and any available space is at a high premium.

Godown rents range from $2,400 to $20,000 United States per year depending on the size and location. The cost of the handling the rubber in and out of the godown, including packing and f.o.b. ship will vary according to the efficiency of the organization and method of packing, that is, baled or boxed.

Vulcanizing Apparatus

(*Continued from page 57*)

Fourth: See that there are no leaks in CO_2 tank or piping.

Fifth: Pump vulcanizer to zero pressure before opening its door.

Sixth: When throwing away old CO_2, see that it is discharged out of doors where it will not be injurious to the health of employes.

Seventh: Test all safety valves daily or during each heat.

The CO_2 drums stand a much higher pressure than any pipe, tank or fitting which is used in connection with them, so it is absolutely necessary that the full drum pressure be prevented from extending to any connection or related apparatus. If a drum head breaks, the drum will fly around like a fire hoze nozzle, and is likely to do serious damage, so great care must be taken in handling same.

CO_2 gas should not be permitted to escape in a confined space where persons are present.

Why the Big Executive is Interested in Safety

By James Newton Gunn

Vice-President United States Rubber Company

You are members of the rubber industry which stands in importance in the employment of capital and men and the influence on the lives of the world, and the people of the United States particularly, very high in the line of basic industries. I wonder if we all visualize the extent of that, and the importance of the rubber industry and some of its peculiarities.

Rubber Industry Peculiar

I am going to digress for a moment to give just this picture. The rubber industry is peculiar in that it is concerned with two principal raw materials—rubber and cotton—which are the only two vegetable products that are consumed wholly away from the land where they are raised. In the instance of rubber the Englishman is the farmer and we are the manufacturers. In the case of cotton, we are the farmers and they are the manufacturers. That is true to all substantial extent, for, as you know, the British have many more spindles than we and they are the dominant manufacturers in cotton.

The rubber industry is peculiarly bound up with the later development of industry of the world. Of course, I understand that recently the rubber industry has been going through a litle period that I firmly believe is just what we might call growing pains, nothing more serious than that. But irrespective of the immediate difficulties in the industry, the industry is so well founded, and its opportunities are so great, and because it is new and attractive, it has been brought to the minds of some of the best men in the country.

The Reason for Interest

It is rather necessary, it seems to me, for us to know why we are interested in safety work. It is not sufficient reason that we are preventing accidents, that we are effecting great savings against employers' liability, that we are protecting plant and men and product, nor is it a sufficient reason that we are protecting the property of the shareholders.

Those things to my mind are really incidental. They are important, but as a result of your work you are building better men, better physically and better morally. You get men with more peace of mind if your work is well done. To show how important a factor that is, any insurance man will tell you that annuitants enjoy a very much longer life than other members of their own class. As soon as a man or woman has an annuity the stress of mind is relieved. Now, if you can relieve your people in your factories of stress of mind, you are going to add to their efficiency and add to their lives.

I think it is also interesting to note that much of your work in safety is very closely akin to the work of instruction of a child to walk or of a boy to swim or to motor. You are teaching him the elementary things, but if you are going to teach him to walk well and to swim well and to motor well in times of danger or stress, he must be taught through intensive and accurate training. The initial training is simple, but it is only the intensive training that is going to count.

Automatic Action

We have all had this experience. For instance, I have driven a motor car for many years. In the last two or three years I have driven comparatively little, but seldom do I ride in a car when an object that must be avoided presents itself to the view, or a possible danger presents itself, but what unconsciously my left foot presses the clutch and my right goes for the brake. It is automatic.

It is the general use of your scheme of education to free the individual of taking specific thought so that he may in time of danger do the right thing automatically. The rigidity of military training is for no other reason than to insure the individual in time of battle, performing all the multiplicity of acts that have become the subject of his intensive training so that the mind may be free to plan and direct the required unusual act. Training men to do the right thing is so vital, not merely for the immediate ends of safety, but to insure the morale of the men, that it is the thing that should be, it seems to me, accentuated above all of the mechanical devices and all of the supplementary things to which perhaps too much attention has been paid in your scheme of publicity. Right acting cannot be extemporized. Instinct alone will not save a man. Trained instinct and intensively trained instinct is the thing that must guide him. To make the right play in the game, to do the right thing instinctively in an emergency or crisis is the result of exact training. To meet the unavoidable accident in the best way involves possibly months and even years of precedence training.

Safety the Product of Big Business

There is another thing about this safety work that I think is noteworthy, and especially in this time when there is such an amount of criticism in the minds of many men against large aggregations of capital. Safety work is peculiarly the development of and the product of big business. It has been made possible by big business because big business has a heart and brain, but the heart and brain of big business is a combination of all the hearts and all of the brains that big business has brought into service and to whom it is given the opportunity. So that I think it would be useful to have our men understand that and realize that big business has given opportunity to men.

I have been very much touched in the last few days in realizing the extent to which the life of one big business man has influenced the lives of thousands and hundreds of thousands of people. A few days ago in New York passed on a great American, a great banker, a great Jew, a great man—Jacob Schiff, and the genius of that man's life seemed to be his ability at all times to keep in touch and to feel the throb of the life of men in every line of activity and every plain of thought, and his example is really worthy the emulation of every business men, big or little.

A New Attitude

I think that it is particularly worthy of our note that this new attitude toward our industrial problems is peculiarly the product of the last few decades—of the last half century. I don't know how to make this clearer than to call attention to this fact that the Pharoah of the oppression—I don't remember how many years ago it was that he lived; we don't know exactly, three or four thousand years ago—had exactly the same facilities of transportation and communication as Napoleon Bonaparte had, just as good. He had roads and he had horses and he had vehicles and he had labor. Napoleon Bonaparte had nothing more. The entire world history has been changed since the time of Napoleon by the development of transportation and communication, and you in the rubber industry have contributed and are contributing to the solving of that problem.

Another Reason

There is another reason, it seems to me, why it is necessary for us to get very clearly the picture of what our problem is. In one of the Jewish books of wisdom is this picture of industry. "How shall he become wise that holdeth the plow, that driveth oxen and is occupied in their labors? Without these shall not a city be inhabitated. But they shall not be sought for in the councils of the people and in the assembly they shall not mount high. But they will maintain the fabric of the world."

Address delivered at meeting of Rubber Section at Ninth Annual Safety Congress of National Safety Council, Milwaukee, Wis., Sept. 29-Oct. 1, 1920.

Now it is your privilege and your duty and the privilege of all of those who are directing the activities of these large aggregations of capital to so train these men that while they are maintaining the fabric of the world they will have a chance to think about other things and immediately about their work—to give them the intensive training that shall protect them and make better men of them, and that is the kind of a picture that I wanted to give to you today as to what seems to me the important thing, the important end of all of this safety work.

Closer Correlation Necessary

It would be extremely important if we could do in the rubber industry and in others better selling of safety, not the selling of safety for safety's sake but the selling of safety for the sake of training men. We have got to get a closer correlation between other industrial activities—our Americanization work, our general educational work—with your work in safety. If we could elicit the interest and expressions from some of our large universities and technical schools, and it is quite within the possibilities that this rubber section can take on and create that same interest, you could have men coming out of those schools with an intelligent knowledge of what this safety work is all about, and in doing so you would be doing it at a time in their lives when as they get along and get in positions of responsibility, executive positions and engineering positions, they would help in the upbuilding of public sentiment to a very much greater extent than you will ever be able to accomplish in any other way.

It is not merely the relation to the Americanization work but the relation of safety work to their self respect, to sanitation to pride in their organization. Build safety work into the general scheme of good organization, administrative organization; sell safety to the salesmen, to the sales department, not because the sales department is exposed—they are not so much—but you need their help in your propaganda. I have looked over a great many reports of safety work and they deal, it seems to me, too much with the mechanical details, as though many of the reports also were written by insurance men that are showing how good a record they have made in saving the company from something. That isn't the real end; that is only an incidental thing. It is very much more important to train men and to build men, for you are going to cure the evil then at its source.

Safety Associated with Insurance

Now safety is so closely associated in the minds of employers with insurance and with protection against loss that you have got to wipe all of that out if you are going to build up a broad intelligent interest and accomplish this thing that you are working for, and it is emblazoned on the outside of your program here that "Safety must be incorporated into the civic and school life and organized as a community activity." You are not going to get that until you are going to give them something else than simply the saving of a little money and possibly the saving of a few lives. We are so accustomed to hearing of deaths and accidents that our minds are dead, but if you can sell the idea of building better men and building new men, I am certain it is going to have a big effect.

Plantations in the Dutch East Indies

By J. H. Muurling

The Dutch East Indies offer an ideal section of the world for the cultivation of rubber and for the establishment of rubber plantations. According to Government statistics the planted area in these islands at the beginning of 1920 amounted to 1,650,000 acres of which 852,500 acres were devoted to the cultivation of rubber. A considerable percentage of this area is yielding rubber while a number of other sections will shortly be in a position where the planters will begin to realize on their investments.

Foreign Capital Welcome

While a great amount of the capital invested in these plantations is necessarily of Dutch origin nevertheless foreign capital is welcome and is playing a large part in the opening up of new tracts and the enlarging of plantations already under cultivation. As a matter of fact in the last annual report of the Bank of Java the statement was made that on the east coast of Sumatra foreign capital is in the majority and that this fact should spur Dutch investors to hold more funds available for that extremely fertile and prosperous section of the Archipelago. In this section are located the two greatest rubber estates in the world operated by the two largest American rubber companies. One of these is 60,000 acres in extent while the other, following the recent purchase of the holdings of a tobacco company, totals 100,000 acres.

Uniformity of Taxes

Foreign capital is not subject to greater taxes and obligations than are the domestic or Dutch investments. Indeed the uniformity is so equal that foreign holders are obliged to incorporate under national laws for their national possessions. Automatically the foreign company becomes a person at law according to the national charter. Such a charter while subject to the approval of the High Government can only be refused in special cases, which do not concern those companies establishing themselves for peaceful economic pursuits. They are even assisted by a Government Bureau of Agricultural Economy which furnishes such local data in reference to climate, soil, etc., as is necessary to check up statements made by would-be promoters.

The arrival of foreign investors can only contribute to the general welfare of the country which is completely in line with the interests of the Government itself.

Such being the case the foreign investor can rest assured that his interests and capital will be protected to the utmost by the Government which is desirous of having the wild spaces of the island under permanent and productive cultivation.

Demand for Foreign Money

However, now is the time for America to develop the production of those tropical products which can not be produced within its own borders and of which it is a consumer. The foreign exchange condition, so embarrassing for export trade, is relieved by the purchase of foreign estates and by the yearly remittances necessary for working capital while the product consumed in the domestic market is paid for in the dollar standard. Thus a demand for foreign money is permanently created instead of a demand for dollars in international intercourse. Considering the low rates of exchange actually prevailing it would seem that now is the propitious moment to consider the acquisition of such foreign developments.

Inexperience No Obstacle

The lack of experience of American managers need not be an obstacle because the Dutch planters with their long local experience, agricultural and as regards labor, have shown themselves as faithful servants to foreign shareholders as they are for their own countryment. It is an easy matter for the foreign manager to find experts in rubber culture who will take upon their shoulders all the details necessary to the establishing of a profitable plantation. Labor is also at hand and while not as cheap as it has been in the past nevertheless does not begin to compare with the cost of labor in the Western hemisphere.

The Netherlands East Indian Government maintains an economic intelligence office and produce sample room in New York, which furnishes information free of charge to all those who are interested in those islands.

Why Pneumatic Tires for Motor Trucks?

By W. E. Shively

Development Engineer, Goodyear Tire & Rubber Co., Akron Ohio

Every development in the transportation industry has been toward a faster, more reliable or cheaper method of transporting men and materials. No one will deny that the motor truck is a very significant development in the transportation system of the world. This was conclusively proved in the world war. I believe most of us are of the opinion that the motor truck is destined to become the most important factor of our transportation system; but judging by the events of the past two years, I believe that automotive engineers will not disagree with me when I say that the development of the motor truck has been limited by the solid tire.

At first, solid tires were used on all but light delivery trucks. On every other type of highway motor vehicle, the limitations of the solid tire were soon discovered and the solid tire was replaced by the pneumatic tire. But the tire manufacturers had not kept pace with the development of the motor truck, inasmuch as they had not perfected a large enough pneumatic tire. Tire engineers, however, were among the first to recognize the shortcomings, and proceeded to develop a large single pneumatic tire for motor-truck use. That they have succeeded is proved by the many thousands of these tires which have given satisfactory service in all parts of this country and with our army in France.

Any discussion of the relative merits of pneumatic and solid tires must of necessity reduce itself to a comparison of the elasticity of compressed air with that of rubber. We are accustomed to think of rubber as a very elastic substance, but it cannot be compared to compressed air in this respect. In one instance we ride on rubber, in the other on air. Very little imagination is necessary to realize what would happen to a modern passenger car if it were equipped with solid tires and run under conditions similar to those under which passenger cars are operated. The reasons that motor trucks can be operated with any degree of success on solid tires are that they are operated at relatively low speeds and are built so heavy that they will endure the shocks and vibration to which they are subjected.

Advantages of Pneumatic Tires

If it is possible to use pneumatic tires on passenger cars to such advantage, it is reasonable to assume that certain advantages will result from their use on motor trucks, and the actual experience of many users has proved this to be true. It has been found that two fundamental advantages result from their use on trucks, increased cushioning and increased traction. The increased cushioning is the most important factor, because it has a greater effect on the performance of the truck. The cushioning ability of a pneumatic tire is four times as great as that of a solid tire of the same carrying capacity. As a result of this greatly increased cushioning, six distinct advantages are gained from the use of pneumatic truck tires

(1) Faster transportation
(2) Economy of operation
(3) Less depreciation of fragile load
(4) Easier riding
(5) Less depreciation of roads
(6) Lighter weight trucks

Each of these six points will now be discussed separately and, wherever possible, actual data will be presented to substantiate the claims made. These figures have been obtained from truck operators, each of whom has taken two trucks of the same make and capacity one equipped with pneumatic tires, the other with solid tires, and operated them under exactly similar conditions; that is, over the same roads and carrying the same loads.

Faster transportation or quicker deliveries result from the increased cushioning of pneumatic truck tires. Operators have found this to be true because it is possible to obtain greater maximum and minimum speeds. Manufacturers of solid-tired trucks remove their guarantee if a speed of 11 or 12 m.p.h. is exceeded, while pneumatic-tired trucks are being operated at 20 to 25 m.p.h. But in ordinary city or farm hauling we are more interested in a greater minimum than a greater maximum speed. That is, in running over rough city streets or country roads, a solid-tired truck must operate at slow speeds, because of the shock and vibration. It is therefore evident that if a truck on pneumatic tires will make more or longer deliveries in a given number of hours, its radius of operation is increased and also its earning power. Table I shows the increased mileage obtained with pneumatic tires by four truck operators.

TABLE I

Details	Operators[2]			
	A	B	C	D
Truck capacity, tons	2	3½	2	2
Period, months	6	1	5	4
Mileage on pneumatic tires	6,414	1,995	5,510	7,014
Mileage on solid tires	4,476	675	2,223	4,677
Miles per gallon of gasoline on pneumatic tires	5.77	5.75	7.21	7.70
Miles per gallon of gasoline on solid tires	3.98	4.77	5.43	7.10
Miles per gallon of oil on pneumatic ires	104.00	32.00	55.00	152.00
Miles per gallon of oil on solid tires	59.00	30.70	54.00	78.00
Cost per mile on pneumatic tires, cents	45.00	31.30	21.50	27.70
Cost per mile on solid tires, cents	56.30	55.00	24.00	31.00

The economy of operating trucks on pneumatic tires has been shown by the experience of many users. There is a considerable saving in gasoline, oil and upkeep. Furthermore, depreciation charges can be reduced considerably. The saving in gasoline is due to a lower power consumption resulting from the increased cushioning obtained. It is a well-known fact that vibration in a machine of any kind results in a loss of power. The vibration caused by the solid tires is practically eliminated by the use of pneumatic tires. I made a statement to the effect that a pneumatic tire possesses four times the cushioning ability of a solid tire. In rolling over an obstruction in the road, a solid tire lifts the entire load on the tire four times as high as it would be lifted in the case of a pneumatic tire. Many roads are full of small obstructions and a certain amount of power is lost in lifting the load of the truck over them. The relative cushioning ability of the two types of tire seems to indicate that the power loss from this cause is four times as much for solid as for the pneumatic type. There is also a saving in power in climbing hills. Because it is possible on pneumatic tires to approach a grade at a much higher rate of speed, less power will be consumed in climbing the grade; it will not be necessary to shift gears as soon, and possibly not at all. The saving in gasoline in the case of five truck operators is shown in Table I; also the saving in oil consumption. The statistics from four truck operators show a considerable saving in oil consumption, probably due to the decreased vibration in all of the moving parts of the truck.

Lessened Upkeep

The upkeep or repair cost of a truck operated on pneumatic is much less than when operated on solid tires. The experience of a large number of truck operators has shown this to be true. It can be attributed to the decreased amount of vibration and the absence of severe shocks and jolts. It is found that parts do not need to be replaced, and that the truck does not need to be overhauled as often. Information pertaining to the upkeep cost of the trucks from which we have taken the other data in this paper cannot be considered reliable, inasmuch as the records do not cover a sufficient period. Reliable information cannot be obtained in less than one year. The estimated saving in upkeep cost is from 25 to 50 per cent.

From the Journal of the Society of Automotive Engineers.

[2] With a 2-ton truck for a 9-month period, a fifth operator obtained 9.1 miles per gal. of gasoline on pneumatic and 6.1 miles per gal. on solid tires.

Regarding depreciation charges, as a result of experience, Goodyear solid-tired trucks are depreciated on the basis of 60,000 miles of service, while the pneumatic-tired trucks are depreciated on a basis of 80,000 miles. In my opinion the 80,000 miles is too low, because there have been Goodyear trucks on pneumatic tires which at the end of 250,000 miles were still in good running condition. I believe that in the near future trucks will be depreciated on the basis of 100,000 miles. Taking all of these cost factors into consideration, it is found that the cost per mile of operating trucks on pneumatic tires is considerably less than that on solid tires. Referring again to the data obtained from truck operators who have kept accurate records, this claim is substantiated as shown in Table I.

Depreciation of Loads and Roads

Let us consider the lessened depreciation of fragile loads resulting from the increased cushioning ability of pneumatic tires. This is now considered by many users of these tires to be one of the most important advantages. While actual data cannot be submitted to substantiate this point, many truck operators engaged in different classes of service have found this to be true. For instance, in hauling fragile materials such as bottled goods and eggs, there is very little, if any, breakage. The farmer experiences very little depreciation in the live stock and produce which he hauls to the markets. Manufacturers have found that many of their products could be shipped without being cased. Then there is the easier riding made possible by the use of pneumatic tires. In the case of delivery trucks, the elimination of the vibration makes it possible for the truck driver and his helper to ride almost continually without fatigue. This is of vital importance in long-distance hauling, where it is necessary to drive for hours at a time. Easy riding is absolutely essential in passenger buses, from the standpoint of both comfort and speed. If the buses do not ride comfortably, the public will not patronize them, and of course speed is very desirable in passenger service.

The Question of Good Roads

The question of good roads is now a very important one. Before the motor truck can be utilized to the full extent of its possibilities, good roads are essential. However, along with the legislation providing these, laws are being considered and in some instances passed, restricting motor-truck traffic. A pneumatic-tired truck has very little more harmful effect on an improved road than a passenger car. This is not true of a solid-tired truck. The effect on dirt roads is the most harmful. Attempts have even been made to prohibit solid-tired trucks from using certain roads, and on some of the principal thoroughfares of our cities this has already been done. Because of the almost total absence of vibration and severe shocks on pneumatic tires, it will be possible to make many of the parts of the truck lighter in weight, thereby decreasing the initial cost of the truck and increasing the pay load, which means again, greater earning power.

Increased Traction

Increased traction is made possible by the greater width of the pneumatic tires, their non-skid treads and their greater flexibility, which allow the surface of the tire to conform more nearly to the unevenness of the road, thereby getting a better grip. As a result of this increased traction, we obtain reliability and safety. By reliability we mean that it is possible for the truck to operate successfully over almost any kind or condition of road, and during all seasons of the year. Truck operators have found that they can use their pneumatic-tired trucks in many ways in which a solid-tired truck could not be used and, instead of laying them up during the winter, could use them continually without becoming stalled in mud or snow. By safety is meant that, because of the increased traction of the tires, the truck will hold the road better and the brakes will be more effective. This point has been thoroughly proved by the experience of many users of pneumatic truck tires and the Goodyear Akron-Boston trucks. In traveling over the mountains along the Lincoln highway during the winter, this increased traction has saved both drivers and trucks from serious accidents, on numerous occasions.

All arguments against the use of pneumatic tires on trucks can be placed under the head of either cost or practicability. It is found that the cost is subdivided into initial cost and the possible loss due to injury and abuse. While it is true that the initial cost of truck pneumatic-tire equipment is greater than that of solid-tire equipment, it has been proved by the experience of many truck operators that this difference is more than offset by the greater earning power and the lower cost of operation. It has usually been found that in from 4 to 6 months the increased cost of the pneumatic-tire equipment is completely wiped out. When specially designed pneumatic-tire trucks make their appearance, this increased cost of pneumatic-tire equipment will be offset by the lower initial cost of the truck itself. There are, of course, many instances where the question of tire cost is secondary to that of speed or easy riding.

As to possible loss due to injury or abuse of the tires, it has been found that this is not a serious objection. There are many instances where pneumatic truck tires have run from 12,000 to 20,000 miles on the original air. As the development of the tires themselves has progressed, so has the successful repairing of the tires been worked out. Repair molds and retreading equipment are now in use in many parts of the country, and are being placed in other localities as rapidly as possible; so, it will be no more difficult to have a pneumatic truck tire repaired than any other part of the truck. While it is possible to injure pneumatic truck tires by abuse, this is no more likely to happen to the tires than to other parts. However, it is possible to repair most of the injuries to tires from abuse. As truck operators become more accustomed to the use of pneumatic tires, failures from abuse will be few.

Practicability of Pneumatic Tires

The practicability of pneumatic truck tires has been questioned probably more than anything else. The first thing to be discussed under this subject is that of delays due to changing tires. The amount of time necessary to change a tire depends upon the type of rim equipment. In the case of detachable rims, where it is necessary to remove the tire from the rim, replace it and then inflate it, it does not require more than 30 minutes to perform the entire operation. In the case of a demountable rim, a change can easily be made in 15 minutes. I am not trying to argue the relative merits of the two types of rim, but an occasional delay of from 15 to 30 minutes is not to be considered when hours will be saved every day that the truck is in operation if it is equipped with pneumatic tires. The average truck driver is not required to make a tire change more often than once in three months.

Maintaining High Inflation

It is often said that it is not possible to maintain the high inflation pressures required for pneumatic truck tires. Very little difficulty has been experienced in this respect. Most garages and service stations now carry sufficient air pressure to inflate tires up to the 42 x 9-in. size, and many can take care of the larger sizes. By the time the largest tires are in general use, there will be sufficient air pressure to keep the tires properly inflated. Trucks equipped with detachable rims, or operating in long-distance or inter-city service, are usually equipped with small air compressors. These trucks experience no difficulty in securing sufficient pressure. One objection, which is not mentioned so much now as when pneumatic truck tires first made their appearance, is the danger of the high inflation pressures carried in these tires. Pneumatic truck tires are made to withstand three to four times the pressure carried in them, so that this objection must be passed to the rims. This is also true of the rim; it is made to withstand many times the pressure carried in the tires. If the rim is properly assembled, there is small chance of accident. While it is true that a few accidents have occurred from this cause, they are usually the result of carelessness. Regarding the rise in pressure caused by the heating of the tire, we have operated these large tires under the most severe conditions possible and in no case have we found an increase in pressure of more than 35 lb. per sq. inch. If the tires are made to withstand three to four times the pressure at which they are operated, it is hardly possible that this additional 35-lb. pressure will cause them to blow out.

(*Continued on page 63*)

Present and Future of Safety in the Rubber Industry

By Sidney M. Schott

Chairman Rubber Section, National Safety Council

The formation of the Rubber Section of the National Safety Council one year ago was the result of a definite need for the services which could be rendered for the betterment of conditions relating to safety, health and sanitation in the rubber industry.

The desired results can only be obtained through cooperation and concerted efforts among members of the rubber industry.

The purpose and intention of this section is to benefit all persons engaged in the manufacture and handling of rubber goods.

The larger firms and manufacturers, as a rule, have very good and elaborate organizations for the improvement of conditions governing safety and health conditions, and have a staff of men who devote their entire time and thought to these subjects.

The smaller firms, however, are not as highly developed, and need guidance and assistance which can be given by cooperative efforts. The interchanging of ideas and experiences will be of great benefit to them. This service will gladly be given, it is hoped that they will take advantage of the discussion and solutions of problems which are the result of the intensive thought and effort which could only be obtained by dealing with large groups of men, and handling materials and machinery on a big scale.

The general feeling of friendship and fellowship among competitors is being fostered. The saving of life and limb, and the betterment of working conditions is of common interest to all, and future results will grow in proportion to the interest manifested. It is expected that this feeling to a large extent, already developed, will grow as time goes on.

Safety Pays

The executives of all companies are realizing more and more that it pays to have safe plants. This lies not only along lines of physical equipment, but in the training of safe and careful workmen. All efforts should be made to have workmen realize that they should be more considerate of their fellow workmen, and more alert to avoid and prevent accidents. The only real organization for safety and health starts at the top, and not only the president should be "sold," but the works manager, superintendent, foreman, inspectors, and men,—down to the humblest worker,— should realize that *safety pays*,—not only in dollars and cents, but in the feeling that "I am my brother's keeper."

The installation and revision of manufacturing processes have in the past been carried out with comparatively small thought as regards to safety and health, but, the successful executive of today, and the future, has constantly in mind that all processes and equipment *must* be made as safe as possible in all respects.

It is no longer the common practice to install machinery and put guards on "At same future time." Guards *must* be installed at the time the machinery is set up. In fact one of

There has been an idea in the past that it was more dangerous, and that it was harder on the health to work in a Rubber Shop, than a great many other industries. This idea is now largely eliminated and statistics will show that conditions are vastly improved, and that accidents due to machinery, and the handling of materials have very much lessened.

The work of the rubber section has been carried on with an idea of attacking those problems which are of most pressing importance. Among these are the following:

1. *Standardization of Accident Statistics*:—This can be accomplished to a large extent, and will then be of great benefit to the members of the industries in promoting a spirit of friendly rivalry. It will then become a contest between the firms as to which one will have the best record of improvements.

2. *Education of the Workmen through Bulletins*:—A series of these have been furnished for distribution, and these will be distributed at cost by those who wish them. In the past it was found that only about five per cent of the bulletins issued could be used in rubber shops. Bulletins relating to accidents common to the rubber industry, are now being printed and distributed. Most of the lost time accidents are due to handling of heavy materials; such as cores, molds, etc., or to carelessness, such as knife accidents, shears, picks, riding on trucks, etc., and the bulletins are intended to call the workers' attention to these types of accidents.

3. *Standard Safety Rules*:—Rules for such departments as mill and calender rooms, tire building rooms, cement shop, etc., are now being formulated, and will be presented for discussion and approval. No set of rules can apply to *every* plant exactly the same, but they are being presented as the results of experience and can be applied where needed.

4. *Engineering Standards*:—There are many problems which members of the rubber section desire aid or guidance upon. The engineering committee stands ready and willing to work on any problems presented by the members. At the present time they have presented a report on best types of floors for mill and calender rooms, and they are working upon standards for making mills and calenders safe.

5. *The Inspirational Work afforded by a good program*:—Meetings of the rubber section which may be called from time to time are of great value, and all persons are urged to hand in their ideas relating to the subjects for discussion.

The present lends much room for encouragement. May the future bear out the hopes afforded by the present.

Address delivered at meeting of Rubber Section, Ninth Annual Safety Congress, Milwaukee, Wis., Sept. 29.-Oct. 1.

Why Pneumatic Tires for Motor Trucks?

(Continued from Page 62)

The large outside diameters of the tires are often objected to because they affect the truck ability and because they raise the center of gravity of the truck. In changing over a solid-tired truck to pneumatic tires, there is the possibility of reducing the ability of the truck. Our experience has shown that unless the truck is operated over a very hilly route, its ability has not been noticeably affected. There have been too many successful change-overs to allow this to become a serious objection. Looking into the future, this question of truck ability and gear ratios will be taken care of by changes in design; so, the question of change-overs is only temporary. Raising the center of gravity of the truck is not as serious as it might seem. The question of getting the load into the truck has not been serious. I believe that the loading platforms are not of such a uniform height that a slight change in the height of the truck platform would make a great difference. This question also appears only temporary. It seems possible to adjust this height in redesigning the truck.

It has been said that in case a large rear tire suddenly becomes flat the sudden drop of the truck might turn it over on a crowned road. When a large tire goes flat, it does not do so suddenly. The blowout or cut in the tire is never very large; so it takes some time for the air to escape and the truck does not tip suddenly. Furthermore, when all of the air is out of the largest tire now made, a 48 x 12 inches., there will be a drop of only 5 inches. Assuming that the track of the rear wheels is 66 inches. the list of the truck would be approximately 4½ degrees, which is not enough to cause the truck to turn over.

Plan Cut in Output of Crude Rubber

Rubber Growers' Association in London Issues Bulletin to Producers of Plantation Rubber Recommending a Twenty-five Percent Reduction in Production—Reasons Given for Action

The following bulletin recommending the curtailment of the production of crude rubber was distributed by the Rubber Growers' Association of London on September 24:

The Rubber Growers Association

38, Eastcheap,
London, E. C. 3,
24th September, 1920.

At a special meeting of the council of this association, held on 22nd September, 1920, it was unanimously resolved to forward the following summary of the present position of the plantation rubber industry, together with their recommendations for meeting that position, to all members of the association and to all kindred associations and plantation owners:

To All Producers of Plantation Rubber

Dear Sir(s):

The rapid decline in the price of rubber to a figure which is very near the average cost of production has been receiving the close attention of the council.

Whereas at the end of 1919 the rubber-goods manufacturers of the United States of America, who take about seventy per cent of the rubber produced, anticipated great expansion in their turnover and were seriously concerned as to whether their prospective requirements of rubber could be satisfied, events which are part of the aftermath of the war have altogether upset these anticipations.

In March and April drastic steps were taken by the leading banking institutions of the world to put a check on the enormous inflation which had reached a dangerous height at the end of 1919, and deflation has been in progress during the past six months in all sections of the economic structure.

Labor Troubles

Labor troubles have been widely operative. The railroad system of the U. S. A. has been in a disorganized state and the movement of freight has been extremely slow and uncertain, necessitating the locking up of an exceptionally large amount of capital in the handling of their vast cereal and other crops.

In consequence of the financial stringency, which has become more acute with each succeeding week, the rubber industry has been faced with the unusual phenomenon of large resales of raw rubber by U. S. A. manufacturers. Their resources are otherwise engaged in completion of extensions to their plant and the carrying of stocks of finished goods the demand for which has been checked by the prevailing uncertainty.

A considerable part of Europe is still in the throes of war, and in other parts the adverse exchanges are paralyzing imports and delaying reconstruction.

A careful study of the imports of rubber during the first half of 1920 and of the present tendency of trade, would indicate that the imports of rubber to be taken by consuming countries during the year 1920 will not exceed their imports during 1919, viz., 350,000 tons. If production continues at the present rate there will be a surplus of anything from 35,000 to 40,000 tons of rubber to be taken care of at the end of 1920, and, unless world conditions materially alter for the better within a few months, this surplus will be further augmented during 1921. As is inevitable when supply exceeds demand, prices have fallen with extraordinary rapidity, and the margin of profit is approaching vanishing point.

Adjusting Supplies

If the production of plantation rubber were in a few hands, it would be a simple matter to adjust supplies to suit any alteration in the demand. Within reasonable limits, the whole organization of the estates lends itself to such adjustment, for the trees improve by being rested from tapping. The difficulty lies in the fact that there are so many separate proprietors controlling the three million acres which are under cultivation.

The members of the R. G. A. represent about one-third of the total, and the industry as a whole undoubtedly does look to the council of this association to give a definite lead in all matters of importance affecting the general welfare.

If producers take united action for the common good, to tide over the present difficult period in the life of the world, there is no occasion why any single one should suffer any permanent loss of the capital he has adventured.

At the end of 1917, when the shipping situation was most critical, a scheme of voluntary restriction of output was advocated by the council and proved to be most beneficial to those who held their rubber until the restriction had time to make itself felt. Although only seventy-five per cent of the acreage owned by members came into that scheme, the moral effect extended to a much larger acreage.

Replies Received

With a view to making a definite proposal to the members of the R. G. A. and to the rubber growing industry at large, framed to relieve the position at present existing, the council have been in telegraphic communication with the principal associations in Malaya, Ceylon, India and Burma, and with the International Rubber Growers' Association at The Hague, which latter is thoroughly representative of the principal rubber growing interests in the Netherlands East Indies.

From the replies received it is clear that, with the exception of Burma, where there is only a small acreage planted, the necessity for the reduction of output is appreciated, and that the councils of these associations are prepared to recommend to their members measures to effect the desired reduction. Your council, therefore, unhesitatingly recommend that a genuine reduction of twenty-five per cent of the estimated normal monthly output should forthwith be brought about by each estate, by modification of its existing tapping system.

Suggestions

Note—It is suggested that—

(1) Estates which are now tapping daily should give effect to the reduction of output by resting one quarter of their tapping area, or, preferably, adopting alternate day tapping without increasing the length or number of cuts, over one half of their tapping area. For reasons set out in the R. G. A. circular of 9th July, 1920, the wisdom of adopting alternate day tapping will be appreciated as being the better of these alternatives.

(2) Estates which have tapped alternate-daily during the last two years should give effect to the reduction of output by resting one quarter of their tapping area.

These suggestions do not preclude the adoption of any other system of effecting the reduction of twenty-five per cent.

It is intended that restriction shall remain in force, on this basis, until the economic position justifies its modification.

It is most desirable that the reduction of output should be practically unanimous, but it is essential that action be taken promptly in order to make it really effective.

Safeguards have been provided in the form of assent which members are asked to sign, which will release them from their agreement should restriction not receive sufficient support to justify its continuance as a binding arrangement.

The council have no power to coerce, but they believe that there is an overwhelmingly preponderance of opinion in favor of the policy which they now recommend, and they most strongly urge its immediate adoption. Statistical information bearing on the subject is enclosed, and the secretary will be pleased to furnish members and others interested with such further information as they may require.

A form of assent is appended, which should be returned to the association in the accompanying envelope at the earliest possible date. The low level of price now ruling for the commodity is the strongest possible argument for prompt action, and it is urged that special meetings of boards of directors be called for the purpose of coming to an immediate decision in this matter.

Forms of Assent

The following forms of assent have been distributed:

To the Council of THE RUBBER GROWERS' ASSOCIATION (Incorporated)

In compliance with the circular from the Rubber Growers' Association (Incorporated), dated 24th September, 1920, I/we agree to reduce my/our production of rubber as from 1st November, 1920, in accordance with the terms of the said circular, provided that this agreement shall cease to be binding unless prior to

31st October, 1920, I/we have been notified in writing that you are satisfied that members owning or controlling not less than seventy per cent of the producing area represented by the members of this association have similarly agreed, and it shall cease to be binding if in your opinion the policy of restriction is not adhered to by an adequate proportion of producers outside this association.

For and on behalf of

.....

.....

Date.....

Total Planted area.....acres

Acreage in Bearing.....acres

Limitations of Assent

The following announcement was issued to all producers of plantation rubber by the Rubber Growers' Association on October 6th.

With reference to my circular of 24th September, I am instructed to inform you that, whilst the Council cannot at this stage foreshadow how long it may be advisable to reduce output, the words "This assent is not to be binding beyond 31st December 1921," are being added to all forms of assent.

FRANK G. SMITH, Secretary.

Production Statistics

The following statistics relative to rubber production accompanied the announcement of September 24th.

(1) RUBBER DISTRIBUTION—1920

	Tons	September, 1920. Tons	Tons
Afloat, 31/12/19			67,000
PRODUCTION, 1920—			
PLANTATION—			
Malaya	195,000		
Dutch East Indies	85,000		
Ceylon	42,000		
India (including Burma)	7,000		
Borneo, Sarawak, Siam, etc.	8,000		
		337,000	
BRAZIL		33,000	
OTHER WILD RUBBER		7,000	
			377,000
TOTAL			444,000
Deduct Quantities Afloat at 31/12/20, estimated at			60,000
Leaving for Imports during 1920			384,000

IMPORTS, 1920—

Of the Imports the estimated quantities for the consuming Countries are:—

	Tons	
United States	250,000 to 260,000	
Canada	12,000	
Great Britain	30,000	
France	14,000	
Japan	7,000	
Germany	7,000	
Italy	5,000	
Holland	4,000	
Australia	3,000	
Belgium	3,000	
Scandinavia	2,000	
Other countries	3,000	
		350,000
Leaving an unabsorbed surplus of		34,000

This unabsorbed surplus represents accumulations of rubber in the producing countries in addition to the stocks held by them at the 31st December, 1919. It does not include any stocks in the consuming countries.

U. K. DELIVERIES TO MANUFACTURERS AND STOCKS IN WHARVES AND WAREHOUSES FOR EACH MONTH DURING 1920.

Month	Deliveries during the month Tons	Stocks at the end of the month Tons
December, 1919	—	23,200
January, 1920	960	21,700
February, 1920	5,700	20,300
March, 1920	930*	21,500
April, 1920	1,470	22,600
May, 1920	1,020*	23,800
June, 1920	3,290	25,100
July, 1920	3,450	27,700
August, 1920	1,926	33,200

* During March and May manufacturers appear to have re-sold part of their Stocks.

Increase in Stocks, January-August (inclusive)	10,000 tons
Total Deliveries to manufacturers January-August (inclusive)	14,846 tons
Total Deliveries to manufacturers, during 1919	35,300 tons

(2) THE EFFECT OF THE 1918 RESTRICTION OF OUTPUT

1918.	Output 1917. Tons	Output 1918. Tons	Estimated output with no restriction 1918. Tons	Loss of Rubber in 1918 owing to restriction. Tons
Malaya	130,000	133,000	156,000	23,000
D. E. I.	48,000	58,000	62,000	4,000
Ceylon	32,000	28,000	35,000	7,000
India, Borneo, etc.	—	—	—	1,000
				35,000

(3) PRODUCTION AND EXPORT OF RUBBER, 1919

Country	Production Tons	Export Tons
Malaya	177,000	204,100
Dutch East Indies	76,000	89,000
Ceylon	38,000	44,800
India	5,000	5,800
Borneo, Siam, Sarawak, etc.	6,000	7,500
	302,000	351,200

Accumulations from 1918 exported 49,200.

Dutch Favor Production Cut

That the idea is spreading may readily be seen by the following bulletin issued by the Rubber Growers' Association on October 12: A well attended meeting of the members of the International Association for Rubber Cultivation in the Netherlands Indies was held at the Hague on October 9th. The meeting, which, under the presidency of A. G. N. Swart, was attended, among others, by H. Eric Miller, Frank Copeman and C. T. H. Hierneiss as delegates from the Rubber Growers' Association in London, had for its object the discussion of measures for reducing the output of rubber estates in general and in the Netherlands Indies in particular during the ensuing months by twenty-five per cent of the estimated normal production.

The representatives of the R. G. A. explained that the great majority of their members had expressed their willingness to adhere to such reduction in output, but that the carrying out of these measures was dependent also on the assent of the Netherlands Indies rubber producers.

After a lengthy discussion, those present, by an almost unanimous vote, expressed in principle the desirability of adopting the proposed reduction in output, on the understanding that in order to attain it, as much as possible shall be done by applying natural methods such as changing the tapping system to alternate day tapping and by energetically carrying out all measures for the improvement of the health of the trees. A circular will be sent to all rubber producers in the Netherlands Indies on the subject, to which a form of assent will be attached.

Goodrich Branch in Flint

The B. F. Goodrich Rubber Company has opened a branch in Flint, Mich. with E. F. VerWiebe, former Harvard football star, as manager.

The Rubber Situation in Brazil

The following despatch from London, dated October 7, appeared in a recent issue of the Journal of Commerce, New York: Whether the wild rubber industry will be able to withstand the gradually shrinking prices in the commodity market is a question which is troubling the minds of Brazilian merchants to no small extent, according to the London "Financial News." Even before the war there were signs that profits on wild rubber collection were declining, while expenses for transportation by land and sea were increasing. In addition, the question of labor began to enter into the calculations and the annual migration of native labor up the Amazon Valley to the rubber properties showed a decided falling off. The situation at present can hardly be said to have improved. Suggestions put forward before the war that improved methods of tapping should be introduced as well as systematic administration and the opening up of reserves do not appear to have borne fruit. The old way seems to have been persisted in, and the consequence is costs of collection have remained pretty well where they were.

Evidence that the Brazilians are alive to the seriousness of the situation is to be found in the debate in the Chamber of Deputies on the introduction of the budget recently. The Government, it is understood, is being urged to encourage exports, and so far as rubber is concerned to reduce or abolish the export duties on the commodity. Owing to the fall in prices the values of rubber exports have already declined enormously, and it seems feasible that the Brazilian Government may intervene. The position is of special interest to the plantation industry at the present time, as Brazil adds about 35,000 tons of rubber a year to the rest of the world's supply.

Since the inauguration of the output restriction programme by the Rubber Growers' Association the market price of the commodity has recovered slightly from the low record of 1s 5½d touched quite recently. The improvement is due to the better sentiment which has prevailed among sellers, as buyers have not entered into competition for the supplies on hand. Forward buying has also been recorded for January-March up to 1s 11d per pound, while for April-June the price touched 2s 0¾d, though reacting later. But the rubber position is not to be accurately perceived by the inspection of temporary fluctuations such as these. It will take time before the industry is purged of the oversupplies which are depressing prices, and meanwhile even the establishment of further low records would not greatly affect the general situation, which must be considered as a whole and not in terms of market temperament.

United States Declares Dividend

The United States Rubber Company declared the usual quarterly dividends of two per cent on the common and preferred stocks, payable October 30 to record of October 15.

News from the Industry at Large

United States Consolidates Divisions—Many Changes in Akron—Jefferson Rubber Incorporates—Akron Stock Prices—Elisha S. Williams Passes Away—Exhibitors at Auto Show

United States Consolidates Divisions

Announcement has been made by the United States Rubber Company to the effect that the boot and shoe division and the mechanical goods division will in the future be consolidated under the management of Homer E. Sawyer, vice-president of the company and for a long time head of the boot and shoe division. George H. Mayo has been made general sales manager of the combined divisions, C. C. Case will remain in charge of the mechanical goods branch of the new division.

James Newton Gunn, president of the United States Tire Co., remains in charge of this division of the company which is unaffected by the above-mentioned consolidation.

In addition to the foregoing George S. Shugart is vice-president in charge of sales of the tire company.

Under the new arrangement three new vice-presidents have been appointed. These are C. J. Butler, E. J. Coughlin and R. S. Willis. Mr. Butler has been placed in full charge of manufacturing for the tire company while Mr. Coughlin will be in charge of the mechanical and boot and shoe division. Mr. Willis will be in complete charge of purchases, stores and transportation, reporting to President C. B. Seger, of the rubber company.

Jefferson Rubber Incorporates

The Jefferson Rubber Company, Jefferson, Wis., has incorporated for $300,000 and proposes to have its main factory located in the city of Jefferson. The men interested in the new enterprise are now selling stock and expect to break ground for the factory at an early date. They expect to have the foundation in before winter and the factory is supposed to be in full operation by May 1st, 1921.

Many Changes in Akron

(Special Akron Correspondence)

The time-honored salutation of "How are you?" has changed in Akron to "What are you doing now?" since the recent slump in the rubber industry.

Men who formerly held important factory executive positions, may be found working today alongside of former subordinates. When third, and, sometimes, second shifts were abandoned, assistant factory superintendents who had charge of these shifts were like skippers without a ship. Having no place to put them, factory managers simply offered them the alternative of going to work at factory wages or getting out. Many accepted the positions in the factory hoping that the industry would soon pick up and they would be restored to their old positions.

Every day one hears that such and such a friend has left his old company and is now with some small concern, perhaps in another town.

The changes are sudden in many cases. The men simply find notices in their mail with two weeks pay and the statement that the company is sorry it is necessary to retrench in that department.

Among the more recent changes was the placing of A. E. Warner, former chief chemist at the Miller Rubber Co., in charge of the laboratories of the Firestone Tire & Rubber Co. John Young, former chief chemist at Firestone, just recently returned from Scotland and England where he has been on business for the company.

Akron Stock Prices

(Special Akron Correspondence)

The tendency of rubber stocks quoted on the Akron stock exchange is still downward, but the slump has slackened somewhat. Firestone common has dropped to 105 bid and Miller common to 108. A bid of 125, or 75 points below the price asked, has appeared for Mohawk common.

Goodyear still continues to be the feature of the market. The common of that issue which had dropped to 70 and then rallied to 78, is back again around the 70 mark. The preferred after slumping to 68, is back to 78 and is holding firm around that mark.

No matter how much stock is offered there appears to be plenty of bargain-hunting investors who are willing to absorb it. Akron's confidence in the rubber business is unshaken, and this view is reflected in markets on which rubber stocks are quoted.

Following are the quotations at the close of the Akron market, October 15:

	Bid	Asked
Amer. R & T com	...	75
Amazon Rubber	...	75
Firestone T & R com	105	110
do 6 pct. pfd.	88½	90
do 7 pct. pfd.	82½	83½
General T & R com	...	600
do 7 pct. pfd	...	94
B F Goodrich com	49	51
do 7 pct. pfd	84½	85½
do 5 yr. 7 pct. notes	90½	91½
Goodyear T & R com	70½	72½
do pfd.	77	78
India Rubber com	140	150
do 8 pct. pfd.	...	80
Mason T & R com	20	22
do 7 pct, pfd.	66	70
Marathon T & R com	...	40
Miller Rubber com	108	112
do 8 pct. pfd.	89	90
Mohawk Rubber	125	200
Portage Rubber com	...	50
do 7 pct, pfd.	65	67
Republic Rubber com	2	2½
do 7 pct. pfd.	...	40
do 8 pct. pfd.	22	25
Rubber Products	...	100
Star Rubber com	...	150
do pfd.	...	100
Swinehart T & R com	...	60
do 7 pct. pfd.	...	70
Phoenix Rub. com	...	20
do pfd.	...	90
Standard Tire com	...	175
do pfd.	...	90

Carlisle Tire Reduces Prices

The Carlise Tire & Rubber Company, Carlisle, Pa., announced a cut in prices ranging from ten to twenty-five per cent, effective at once. In announcing this reduction it was stated that there will be no corresponding decrease in the wages paid employes.

Elisha S. Williams Passes Away

The death of Elisha S. Williams, vice-president of the United States Rubber Company, on October 8, 1920, was a great shock and profound sorrow to the host of friends both in and out of the organization, who knew and loved Mr. Williams.

Mr. Williams possessed qualities of heart and mind which endeared him to a wide circle of friends and acquaintances. Courteous, considerate of others, kindly, with always the best interests of his associates at heart, he won the liking and good-will of all with whom he came in contact.

Mr. Williams was born in Malden, Mass., in 1873, and was educated in the Malden public schools, taking a business course in the Malden high school. He then entered the employ of the Revere Rubber Company, and in the course of a few years became the New England manager, a little later the Chicago manager, and in a year or two was promoted to the position of general sales agent, which, in turn, led to his assuming the chief executive position in that company as treasurer, and later president.

On January 1, 1920, the Revere Rubber Company was purchased by the United States Rubber Company chiefly because of its desire to secure the services of Mr. Williams, who was then elected president of the Rubber Goods Manufacturing Company, which at that time through its subsidiaries controlled all the mechanical and tire business of the United States Rubber system. Mr. Williams was largely instrumental in the consolidation of the tire business of the company's subsidiaries by forming the United States Tire Company in 1911, of which he was the president until 1915. In 1915 he was elected vice-president of the United States Rubber Company, in charge of the mechanical goods business. He was also a director of the United States Rubber Company, a member of the operating council, and president of several subsidiary companies.

Exhibitors at Auto Show

All records for the number of parts and accessory manufacturers exhibiting at the National Automobile Shows are scheduled to be broken at the Exhibitions to be held in New York and Chicago next January.

Figures made public by the Motor and Accessory Manufacturers Association indicate that a larger number of parts and unit makers than ever before will take space at the National Shows.

Applications for space have already been received by the Association from 120 manufacturers for the New York Passenger Show, and from 102 manufacturers for the Chicago Passenger Show. Altogether, 129 members of the Association are scheduled to exhibit.

Interest in the National Automobile Exhibition is unusually keen this year in manufacturing and dealer circles.

The following members of the Association have been assigned space:

News of the Rubber Association

Trade Organization Issues Bulletin on Recent Hearing Regarding Protection of Customers Against Declining Prices Before Federal Trade Commission—"Shippable" Cases for Crude Rubber

Following is a legislative bulletin issued October 14 by the Rubber Association of America, Inc.:

Members will recall that in 1919 the Federal Trade Commission initiated investigation proceedings for the purpose of securing definite information regarding the practice of protecting customers against decline in manufacturers' prices.

It is understood that the Federal Trade Commissions' investigation was predicated on the evidence submitted in connection with its inquiry regarding this practice as applied to one specific industry.

The Commission soon found, however, that this practice is in vogue in a large number of industries and that the conditions of the various industries and the reasons for the use in them of this practice are so varied that no general ruling could satisfactorily be based upon the evidence adduced in connection with one particular industry.

The Commission, therefore, invited all of the important industries in the country to inform it of the manner in which they applied this practice, if at all, and the particular reasons and conditions which made the practice desirable or undesirable from the standpoint of the manufacturer, wholesaler, dealer and consumer.

The two divisions of this Association which are most vitally interested in this practice are the Footwear Division and the Tire Manufacturers' Division although the practice extends to other specific articles manufactured by our members i. e. clothing, garden hose and possibly one or two others.

Upon receipt of the Federal Trade Commission's inquiry in this office it was decided to ask the Footwear and Tire Manufacturers' Divisions to give careful consideration to the reply that should be made to the Commission. In connection with this consideration it was decided to offer to the Commission the machinery of the association to assist in obtaining the facts regarding the present practice of our industry in this matter together with a comprehensive expression of views regarding the necessity for its continuance.

A sub-committee was appointed to confer with the Federal Trade Commission regarding this inquiry and as a result of our conference with that body our offer to assist in its inquiry by securing necessary facts and views was accepted. Shortly thereafter a questionnaire was prepared by our Sub-Committee with the assistance of counsel and was submitted to the Tire and Footwear Divisions.

Responses to our questionnaire were received from a large majority of the members and a compilation was prepared in which there were set forth in considerable detail the facts regarding the present practice in this matter together with the views of our membership regarding the continuance of this practice considerable care being taken to present the views of the minority as well as those of the majority. This compilation was presented to the Federal Trade Commission under date of August 27 and at that time a request was made for permission to appear at the trade practice submittal held on October 5th.

A joint Sub-Committee representing both the Tire Manufacturers' and Footwear Divisions, including counsel, attended this trade practice submittal which occupied all of October 5 and 6. The first day of the hearing was taken up almost entirely with arguments from those opposed to the practice of protecting customers against decline in prices.

Most of the industries represented by those speaking against the practice do not find it necessary to employ the practice and their arguments as to the unfairness of the practice were based largely upon what they considered would occur if the practice were introduced into those industries. No facts were shown indicating that any unfairness had actually resulted from the use of this practice.

During the second day of the hearing the proponents of the practice were given an opportunity to be heard. The representatives of this Association explained to the Commision the very seasonal nature of the footwear business and the tire business and set forth the various reasons why it was considered necessary by the members of the Association that this practice of protecting against price decline should be continued.

With relation to tires the practice may be divided into two classes, first the protection as applied to spring dating business and, second, protection as applied to current business.

The answers to the questionnaire submitted to the members of the Tire Manufacturers' Division showed that an overwhelming majority of the members favored the continuance of this practice with relation to spring dating business. With this in view your representatives presented to the Commission the strongest possible case in favor of such continuance.

As to the necessity or advisability of continuing this practice with regard to the current business the membership of the Tire Manufacturers' Division was somewhat divided so that in this connection your representatives merely called to the attention of the Federal Trade Commission the fact that there was a division of views as to the necessity of the continuance of the practice with regard to current business. It was noticed that the commissioners had before them during the argument by your sub-committee copies of the summary which this office prepared from the members' replies to the Tire Division's questionnaire.

It is the view of the representatives of this Association who attended the trade practice submittal that there was nothing brought out at that time which would justify the Commission in making a general ruling forbidding the continuance of the practice of protecting against price decline.

At the conclusion of the hearing counsel for the Rubber Association inquired of the Chairman of the Commission what steps the Commission contemplated taking in the near future with regard to the matter in hand. The Chairman replied that the Commission had not yet decided what procedure it would follow, but intimated that it might possibly issue some statement with regard to this practice after a full examination of the information which it had gathered, or it might use this information merely as a guide in the case of any specific complaints which might hereatfer be considered by it in relation to this practice.

The Chairman stated further in reply to a specific question asked by counsel for the Association that before any order is issued by the Commission forbidding the continuance of this practice by the rubber industry those interested will be given the fullest opportunity to present whatever evidence and arguments they may desire.

The Commission stated that it would receive briefs upon the subject of the inquiry at any time within thirty days, and this Association intends, through its counsel, to file such a brief.

In conclusion it may be said that it is the opinion of counsel for the Association that unless and until the Federal Trade Commission issues a definite order directing manufacturers of rubber goods to cease the practice of protecting their customers against price decline such manufacturers will be warranted in continuing this practice, if they so desire.

"Shippable" Cases for Crude Rubber

The following bulletin has been issued by the Rubber Association of America, Inc.:

To Firm Members:—

As of possible interest to all engaged in the rubber industry, we are enclosing for your information, copy of a letter addressed by the Singapore Chamber of Commerce to the Singapore Rubber Association, with respect to "shippable" cases for crude rubber.

Singapore, 26th, July, 1920.

The Secretaries,

The Singapore Chamber of Commerce Rubber Association,

Dear Sirs,

"SHIPPABLE" CASES FOR RUBBER

Your letter of the 12th instant was considered by our General Committee at a Meeting held on the 21st instant, and we were instructed to hand you the following extract from the Report of the Shipping Sub-Committee of the Chamber upon the subject.

"Shippable cases are cases of sufficient strength to stand the handling to which they are likely to be subjected in loading into and discharging from steamers without breaking or opening out."

"The greater proportion of cases at present in use are in our opinion not sufficiently strong to stand ordinary handling, and therefore the present protective clauses should be inserted on all Mates Receipts and Bills of Lading until such time as cases suitable for containing rubber in an efficient manner are used."

In connection with this matter, we are to point out that, it is believed, the ordinary Momi Cases are frequently overloaded, and it is thought that if a smaller quantity of Rubber was put in, they would not be so likely to burst asunder.

Another suggestion we may put forward is that if the practice of putting an additional strap round the middle of the case were more general, a good deal of the damage might be prevented.

It is felt that the trouble of burst cases is not caused so much by tran-shipment and handling of the cargo as from unsuitable packing, and, provided this can be overcome, it is thought that the trouble will be considerably diminished.

News of the Mid-West Association

The following bulletins were issued recently by the Mid-West Rubber Manufacturers' Association:

Tire Over-Production or Under-Consumption

OCTOBER 8, 1920

As some errors occurred in the reproduction of the letter from one of our members on "Tire Over-production" contained in our Bulletin 67 issued October 6th, we are re-publishing below the two principal paragraphs in order that his line of argument may be made clear.

He should have been quoted as saying that the aggregate production of tires in the United States in his opinion was 20,000 tires less per day than the estimate of 142,500 made by our original correspondent as published in our Bulletin 57 of September 24th. These figures of production for six months were as follows, reckoning 150 production-days in six months for the large companies and 125 production-days for the smaller companies:

COMPANY	PER DAY	TOTAL
Goodyear	25,000	3,750,000
Goodrich	20,000	3,000,000
Firestone	15,000	2,250,000
United States	20,000	3,000,000
Fisk	15,000	2,250,000
Miller	7,500	1,125,000
Ajax & Racine	10,000	1,500,000
	112,600x150 production days =	16,875,000
All others	30,000x125 production days =	3,750,000
Grand Total	142,500	20,625,000

With the above figures in mind the line of argument in our latter correspondent's letter will be clear. It should have read as follows:

"The writer's estimate is in serious conflict with the one which you submit. In the first place, I believe that the aggregate production is approximately 20,000 tires less per day and the number of days in six months 125 instead of 150, which would give nearer 15,000,000 tires per six months' production than 20,000,000 and, further, that the consumption of tires is not reduced as materially as is shown in your bulletin for the reason that much of the increased mileage per unit is due to the improved condition of the roads as well as the improved manufacture of the product. Improved condition of roads increases mileage per day as well as increasing mileage per tire.

"With these modifications, the writer reaches the conclusion that the absorption of the reduced production now going on will, before the end of the present year, so far absorb the over-production or the under-consumption that a normal production and consumption of approximately 30,000,000 tires per annum will enable the business to reach its normal condition again."

— —

Turn-Over Tax at One Per Cent on Business

OCTOBER 14, 1920

Meyer D. Rothchild, Chairman of the Business Men's National Tax Committee of 6 West 48th Street, New York, has published a most interesting paper entitled, "Gross Sales, or Turnover Tax at One Per Cent, and No Other Tax on Business." This was presented at the annual meeting of the National Tax Association at Salt Lake City September 6-10, 1920. Copies will be furnished to those interested on application.

In it the effect of such a tax on articles of wide utility has been worked out, showing that the ultimate tax to the consumer will not much exceed three per cent of the price of the commodity and will often be less.

Such a tax on a rubber cord tire 30 x 3½ retailing at $35.10 has been worked out by Horace De Lisser, president of the Ajax Rubber Company, as follows:

		Tax at 1 per cent
1.	Crude Rubber used at importation cost	$5.35	$.0535
2.	Raw Cotton used as imported	3.00	.0300
3.	Raw Cotton used domestic growth	.40	.0040
4.	Imported Cotton into Yarn	4.20	.0420
5.	Domestic Cotton into Yarn	.80	.0080
6.	Yarn into Fabric	5.50	.0550
7.	Yarn into Fabric	1.00	.0100
8.	Miscellaneous Pigments	.70	.0070
9.	The above materials converted into tires by the manufacturer, who sells them to Franchise Dealer	28.45	.2845
10.	Franchise Dealer sells them to the Dealer	29.90	.2990
11.	Dealer sells them to Consumer	35.10	.3510
	Total Tax on price for Consumption		1.1440

Or 3.259 per cent of the price to the Consumer.

It is probable that the question of revising our Federal taxes will be actively discussed in Congress when it convenes in November. Senator Penrose, chairman, Finance Committee, Senate, is quoted as saying he will urge this matter at the earliest possible moment.

Several industrial groups are working with the view to formulating a basis of taxation which will be pressed for action in Congress. Among these is the National Industrial Conference Board.

We understand their policies are largely being formulated by Dr. Thomas S. Adams, Chief Tax Adviser of the Treasury Department. Dr. Adams is reported as being absolutely opposed to the gross sales tax and as advocating an increase in the present excise tax from the present 5 per cent to 10 per cent.

It is important that we act promptly and intelligently on this very vital subject, and we shall appreciate an early expression of our members' opinions.

American Goods Imported into Great Britain Must Be Marked "Made in U. S. A."

OCTOBER 16, 1920

The American Chamber of Commerce in London is requested by its automobile section to remind American exporters, not only of automobile accessories but also in all lines of trade ,that American trade marked articles coming into Great Britain are required by the British Customs to bear the words "Made in U. S. A." or equivalent indication of the country of origin.

This rule, the Chamber desires to point out does not apply to American goods alone but to all foreign trade marked goods and is one of the provisions of the Merchandise Mark Acts of 1887, dating back to the reign of Queen Victoria.

Since trade marked articles not bearing indication of the country of origin are liable to seizure and confiscation, importers into Great Britain are being caused serious inconvenience and in many cases actual losses by the failure of American manufacturers of trade marked articles to comply with these regulations. What generally happens is that the importer is notified and warned the first time but allowed to take away the goods, provided he stamps, stencils or otherwise marks the goods with the country of origin to the satisfaction of the Customs Authorities. Subsequent offences, however, are likely to be punished by confiscation.

Talk of Rubber Merger

OCTOBER, 18, 1920..

A special dispatch from Youngstown, Ohio, to the New York Journal of Commerce under date of October 14, follows:

"Certain of the rubber producers have succeeded in so liquidating inventories and reducing current obligations as to be in a very comfortable position, barring lack of pneumatic tire and tube demand. One big producer, however, which has issued stock and negotiated a large short-term loan is reported to be again in the market for funds.

"Rubber interests believe that a merger of some of the more important producing units would be one of the most stabilizing influences possible and expect to see such a development ere long, especially as reports are now involving the names of leading interests in such a step under the leadership of New York financiers."

Intercontinental Plant Reopens

The Intercontinental Rubber Company's plant at Torreon, Mexico, has been opened and is working at full capacity. The works had been shut down for some time.

Elvin L. McGrew Dies

Elvin L. McGrew, aged fifty-seven, of Linwood, Avenue, Crafton, purchasing agent and general traffic manager of the Standard Underground Cable Company, died Friday, October 8, in the Imperial Hotel, New York City. Mr. McGrew, who was widely known among manufacturers of the country, was born in New Alexander, Ohio. He began his business career as a telegraph operator, and after entering the service of the Pennsylvania Railroad, became freight agent at New Cumberland, W. Va., where he remained four years. In 1900 he became connected with the Standard Underground Cable Company. A few years ago he was a leader in the formation of the Purchasing Agents' Association of Pittsburg, and was its first president. Later he became prominent in the national organization. Mr. McGrew was deeply interested in civic affairs of Crafton and was for many years president of the Board of Education. He was a member of the First Methodist Episcopal Church, Crafton, and secretary of its board of trustees. He was also a Mason and a member of the I. O. O. F. His widow, Mrs. Annie Elliott McGrew; a daughter, Mrs. Fred L. Dudgeon, Crafton; a son, Elliott B. McGrew, Port Huron, Mich.; a brother, Frank E. McGrew, Chicago, Ill. and a sister, Mrs. Ambros Hobson, Cambridge, Ohio, survive.

Fisk Managers Meet

Branch managers and salesmen from ten cities included in the Spokane district of the Fisk Rubber Company assembled October 8 at the Davenport hotel for the annual conference, the entire day being devoted to executive and trade sessions. The Spokane district includes Portland, Tacoma, Seattle, Salt Lake, Great Falls, Butte, Billings and Rapid City, S. D. Managers and salesmen from all branches attended the conferences.

General Manager Fred H. Ayres of Chicopee Falls, Mass., the chief speaker devoted two hours to a discussion of 1921 plans, prevalent business conditions and prospects for the year.

Sterling Team Twice Champions

The Sterling Tire Baseball Team has for the second consecutive year won the pennant in the Rubber Industries Athletic League, New York. The standing of the clubs at the end of the season was:

	W.	L.
Sterling	14	2
United States	11	4
Ajax	6	7
Goodyear	2	12
Keystone	2	6
Kelly-Springfield	1	3

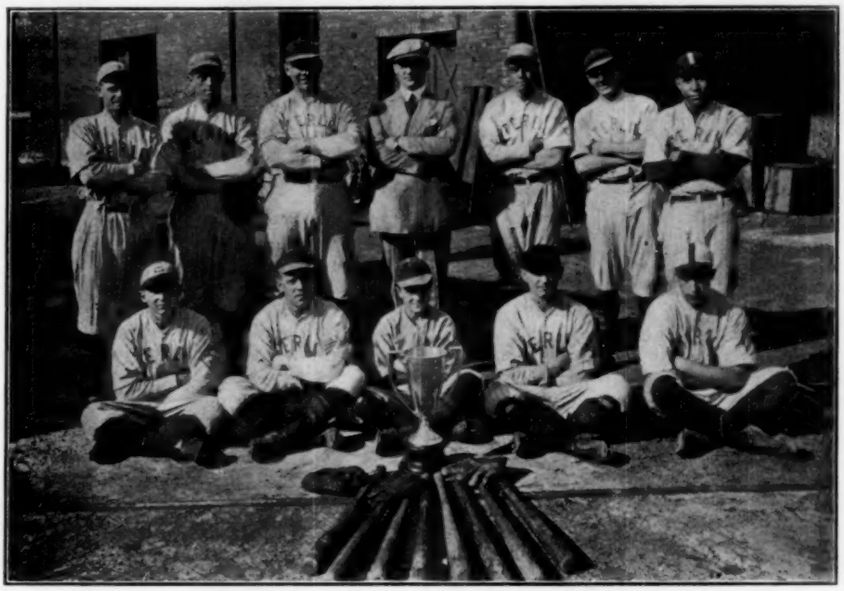
This second victory is especially unusual since the Sterling Tire Corporation is probably the smallest of the organizations represented in the League.

In spite of this and also of the fact that among their opponents were numbered such fast semi-pros as Simpson & Degnan (who have also completed a successful season with Tesreau's Bears)—the Sterlings had no difficulty in gathering in the pennant.

One somewhat interesting incident of the season was the fact that one of the Sterling 1919 "stars" had "jumped" to another team in the League. Sterling's victory in 1919 had been attributed in some degree to this player's work. The results of this jump, however, were imperceptible, contrary to some expectations—and did not visibly affect the progress of the victors.

The players for the champions were all recruited from the factory. None of them had played much more than the normal "open lot" games, although their pitcher, Harvey Davis, has been showing professional class in winning 34 out of 40 games played during the Rubber Industries Athletic League's two years of existence.

The cup must be won three times. Manager Rourke of the Sterling Team announces that his tribe will be out for blood and the third leg on the cup next season.



Baseball Team of The Sterling Tire Corporation

The names of the players in the illustration are as follows: standing left to right—Brameld, 2b; Davis, p; Rourke, 1b,; capt. and mgr., O. Basten, vice president of Sterling Tire Corporation; Hess, 3b; Dittrich, c.f.; Jackson, l.f. Seated, left to right—Marquard, o.f.; White, r.f.; Botto, mascot; Roach, c.; Calendriello, ss.

Batting and field averages of the champions were as follows:

Players	Position	Games	Batting Average	Fielding Average
J. Rourke	1B.	14	413	955
T. Calandriello	SS.	14	333	918
A Roache	C.	14	311	984
W. Jackson	L.F.	14	310	900
C. Hess	3B.	14	283	804
P. Dittrich	C.F.	13	265	1000
W. White	R.F.	14	237	818
H. Davis	P.	13	205	967
T. Brameld	2B.	13	205	921
A. Jackson	O.F.	2	167	1000
G. Meany	O.F.	4	000	1000
W. Markowsky	I.F.	1	100	1000

Globe Moves Offices to Trenton

The Globe Rubber Tire Manufacturing Company has recently announced the removal of its general executive and sales offices from 1755 Broadway, New York City, to its factories at Trenton, N. J.

Exports of Rubber for August

Statistics issued recently by the Bureau of Foreign and Domestic Commerce of the Department of Commerce, Washington, D. C., show that exports of rubber manufacturers and insulated wire and cables from the United States during the month of August 1920 totalled $6,193,987. This summary does not include exports to Porto Rico and Hawaii which totalled $436,442. Exports for August show a decided falling off as compared to the figures for July when exports to foreign countries totalled $8,219,178 while those to Porto Rico and Hawaii amounted to $488,924.

The value of articles exported, not including the two above-mentioned countries, were as follows: Belting, $322,613; hose, $251,807; packing, $103,727; boots, $49,396; shoes, $481,460; druggist's rubber sundries, $129,838; soles and heels, $65,964; automobile tire casings, $3,121,530; inner tubes, $327,009; solid tires, $265,549; all other tires, $53,931; all other manufactures of rubber, $600,955; insulated wire and cables, $420,208. Exports to Porto Rico and Hawaii were as follows: Belting, hose and packing, $22,362; automobile tires, $325,704; all other tires, $5,045; all other manufactures of rubber, $83,331.

Mid-West Association Meets

The regular monthly meeting of the Mid-West Rubber Manufacturers' Association was held at the Chicago Athletic Association on Tuesday, October 19, the meeting having been postponed one week on account of the regular meeting date falling on Columbus Day. Forty members were in attendance.

A note of optimism was evidenced in what nearly all of the speakers said, the apparent feeling being that business in the tire industry was already on a firmer basis and that demand was increasing among the dealers.

MARKETS

Manufactured Rubber Goods

NEW YORK, OCT. 21, 1920

Business conditions in the market for manufactured rubber products have not shown any material improvement during the current month, and leaders in the industry are still concerned over the unfavorable business situation. Demand has fallen off in many lines, and manufacturers find themselves facing demands for lower prices from all sides.

Such conditions in the rubber industry, after the booming markets of the past few years, are somewhat unusual, but the great rubber business is more fortunate than many other branches of American industry which are today passing through the same period of readjustment of values. Reaction against war prices has apparently become universal, but in many lines the revision is being hastened more than conditions justify, this undue haste making for almost complete demoralization of business.

Curtailment of production is now the order of the day in the rubber field, and manufacturers are taking care that they do not overstock their own markets, thus making it still more difficult for the market to reach a stable basis later on.

AUTOMOBILE TIRES

Resumption of tire manufacturing on a large scale has not yet been started, and leading manufacturers are keeping most of their plants idle. Stocks of tires in first hands are still large, and no tendency to continue manufacturing in the face of such business conditions is being manifested.

None of the large tire manufacturers have openly announced price reductions on their tires since our last report, but a few of them are credited with selling tires to their trade at "very attractive prices." Some smaller concerns are doing business at the present time at new and reduced prices, enabling tire sellers to offer supplies at prices materially under those ruling in the market a short time ago.

MECHANICAL GOODS

Numerous orders for airbrake hose for the railroads are pending, and some contracts have been let during the past few weeks The roads are not yet in the market for supplies of hose in large quantities, however, and the big buying is not looked for in the near future, the falling markets acting as a deterrent to prospective purchasers.

The activities of the cotton duck market are being closely watched by manufacturers of mechanicals. Prices on finished goods are determined largely by ruling prices on ducks, and the market on this latter article in is an uncertain position, with the trend downward.

Belting is moving slowly at the present time, in both domestic and export markets. Packing is in much the same condition. The basis of prices on all lines of mechanicals is expected to be readjusted when raw materials markets settle on a firm level.

BOOTS AND SHOES

Fall and winter buying is lighter than usual this year, owing to the tight money markets and the lack of faith of retail distributors in the maintenance of prices. Dealers are now stocking up for their early seasons business on rubbers and rubber boots, but sales are expected to be light in the metropolitan district at least, due to the abnormally heavy sales toward the latter part of last winter.

Rubber heel business continues active. One of the largest manufacturers of heels in the country has determined to stamp out the price-cutting evil and has consequently announced that on and after January 1, 1921, all agents will be discontinued, sales being made direct from the manufacturer. Sales will be made only to dealers maintaining the resale price fixed by the company.

MISCELLANEOUS

A brisk inquiry for druggists' sundries is reported by manufacturers' representatives, the approach of cooler weather bringing out a good buying demand. Export trade in sundries continues fairly active.

Raincoat makers are pushing their lines of raincoats and rubberized fabric clothing for the fall season, but find the going hard in most cases, consumers being unwilling to pay present prices. Continued sales of released army goods at low prices are hampering business in this branch of the market.

Manufacturers of rubber doormats and similar specialities report a good business. Toy makers are also doing a fair amount of advance business in rubber toys for the Christmas season.

Cottons, Yarns and Fabrics

NEW YORK, OCT. 21, 1920

The downward trend of the cotton market continues unchecked, and it is becoming evident that the present movement is not going to stop until rock bottom was reached. Market factors who a comparatively few months ago were predicting that the Southern growers would realize their dream for sixty cent cotton are now joining the ranks of the bears, and predicting that no recovery, however sharp, can carry the market up again to its recent high levels.

An unusual feature of the present market is the selling of future cotton below the prices named on nearby delivery staple. Thus on Tuesday, October 19, October and November cotton closed at 19 cents per pound, while December delivery was commanding 19.90 and 19.95 cents per pound. The explanation of this is seen in the fact that the mills are not in the market for cotton for nearby shipment, while some hope is held out for an improvement in business after the turn of the year.

Turbulent activities on the part of the resurrected "Ku Klux Klan" in the South are giving some alarm, numbers of cotton gins and large stocks of cotton having been burned in various sections of the cotton belt by these night riders in their efforts to keep their fellow-growers from selling cotton at present "disastrous" going prices. All of the responsible cotton-growing associations in the South have passed resolutions condemning this night-riding, and it is believed that the authorities will put a prompt stop to the destruction.

The strike of British miners, with prospects for further industrial disorders in England has led to a sharp curtailment of buying here for English account, and this has contributed still further to the weakness in the American market. With cotton having closed at as low as 17.45 cents per pound on Monday, October 18, some normally well-posted authorities believe that the bottom has been reached and that it is about time for the pendulum to swing the other way for a while.

EGYPTIAN COTTON

Latest advices from Alexandria state that the boll weevil pests are attacking the growing crop, but it is too early in the season to forecast any approximate damage to the crop. Buyers here discount this news as the usual early-season bullish propaganda. Quotations for Egyptian-Sakellaridis cotton, full good grades, have been received, shippers quoting 83¼ cents per pound for November-December delivery. For good fair Sakellaridis the market is held at 70¼ cents per pound,

both of these prices being based on c.i.f. terms, landed in either New York or Boston.

SEA ISLAND COTTON

The general slackness in the cotton market is detracting attention from the Sea Island industry. With the call for long staple cottons dull as at the present time, spinners are taking the stocks already at hand and are not paying any attention to offerings f.o.b. primary points, spot offerings being sufficient to take care of the meagre requirements of the spinners. The new crop is progressing slowly, suffering from poor weather condition and boll weevil ravages.

AMERICAN-EGYPTIAN COTTON

Insurgent factions in the growing districts who announced some time ago that they intended to hold on to their cotton until the market goes more their way have received financial backing, Los Angeles banks having joined in a $2,500,000 pool to be used in "protecting" the long-staple cotton crops of California, Arizona and New Mexico. Under the plan adopted the banks will advance to banks in cotton-growing territories sums up to twenty cents per pound on pima or long staple cotton and eight cents per pound on short staple cotton to cover the cost of picking, ginning, baling, warehousing and insuring.

TIRE FABRICS

Prices continue withdrawn, leading sellers accepting business at private terms arranged with individual buyers. Much weakness is still in evidence, and spinners have slackened production considerably while current business stagnation continues. Some lots of tire fabrics for resale are finding their way on the market from time to time, at prices which show the seller a good loss in instances where the goods were bought at the recent high during the booming market.

DRILLS, SHEETINGS AND OSNABURGS

Falling markets for all classes of cotton are having no good effect on the market for textiles, and the market for cotton goods used in the rubber trade is no exception. Much re-selling is going on, and the undertone of the market is weakened considerably. Prices quoted below represent spot values as near as can be ascertained, but prices are varying with different sellers, and no accurate average is possible under present conditions.

TIRE FABRICS

17¼-ounce Sea Island, combed, sq. yd.	Nominal		
17¼-ounce Egyptian, combed	—	@	—
17¼-ounce Egyptian, carded	—	@	—
17¼-ounce Peelers, carded	—	@	—
17¼-ounce Peelers, combed	—	@	—

DUCKS

Belting (pound basis) lb.	Nominal		
Hose (pound basis)	Nominal		
*Enameling	.65	@	—
Shoe Ducks	—	@	—
Single filling yd.	.28	@	—
Double filling	.30	@	—

*Price varies according to width.

DRILLS

37-inch 3.25-yard yd.	.14½	@	—
37-inch 2.75-yard	.16¼	@	—
37-inch 3.00-yard	.15	@	—
37-inch 3.50-yard	.13⅜	@	—
37-inch 3.95-yard	.11	@	—
37-inch 2.00-yard Southern	Nominal		
37-inch 2.00-yard Northern	Nominal		
40-inch 2.40-yard Southern	Nominal		
40-inch 2.40-yard Northern	Nominal		
52-inch 1.90-yard Southern	Nominal		
52-inch 1.90-yard Northern	Nominal		

SHEETINGS

40-inch 2.35-yard yd.	Nominal		
40-inch 2.50-yard	.18	@	—
40-inch 2.85-yard	.15	@	—
40-inch 3.15-yard	.17¾	@	—
40-inch 3.60-yard	.14½	@	—
40-inch 3.75-yard	13½	@	—
40-inch 4.25-yard	.12	@	—

Note—In view of the unsettled conditions prevailing in the market at the present time, the prices quoted above are more or less nominal, and are not guaranteed.

BURLAPS
(Carload Lots)

	Cents	Per	Yard
7 -ounce 40-inch	——	@	——
7½-ounce 40-inch	7.15	@	——
7½-ounce 45-inch	7.90	@	8.00
8 -ounce 40-inch	7.50	@	7.75
8½-ounce 40-inch	——	@	——
10 -ounce 36-inch	9.50	@	9.60
10 -ounce 40-inch	10.15	@	——
10 -ounce 45-inch	Nominal		
10½-ounce 40-inch	9.90	@	10.00

* And higher, according to width.

Chemicals and Compounding Materials

NEW YORK, OCT. 21, 1920

No improvement in the chemical market has been reported, insofar as the tire manufacturing trade is concerned, and dealers in chemicals are not counting upon their rubber business as any great factor under present market conditions. Rubber makers are no longer in the market for compounding materials, and are delaying deliveries on some goods which had been purchased early in the year to be delivered on future contracts. Some of these goods are being turned back upon the market to be re-sold, manufacturers being unwilling to tie up their money and storage space in carrying over these supplies until they will be needed.

The slackening of demand has not had a demoralizing effect upon the general market however, and the price declines appear to have been halted for the time being, at least, buying from other sources making up for the lack of demand on the part of the tire manufacturers. Pigments continue in limited demand, and producers profess to be unable to take care of all of the business offering at the present time. While prices are not moving upward again, the tendency at the present time appears to be a trifle firmer.

IMPORTS AND EXPORTS

Cancellations of many export contracts have slowed down activities in export circles to a considerable degree, adverse financial conditions in the far East having a depressing effect upon the market. Imports, however, are steadily increasing, chemicals and compounding materials of all kinds reaching the market in ever-increasing quantities. Domestic manufacturers, however, have no fear that the foreign manufacturers will again dominate the market as in pre-war days.

LITHARGE

Despite the lack of demand from the rubber trade, producers of litharge are still doing a good business, and have welcomed the slackening of buying on the part of the tire trade as this lull in demand gives them an opportunity of catching up with their business. Production is being speeded up as much as current conditions will allow, and producers are hopeful of being in a position to take care of all the business offering by the first of next year. Prices are generally well maintained.

LITHOPONE

Business in this line has picked up somewhat, but the market is not yet in the strong position it occupied early in the year. Many cancellations have been made since prices were advanced for the closing quarter of the year, but this business is being made up, a few instances of price shadings having brought many buyers who had cancelled back into the market. Producers are looking for some carry-over at the close of this season, but the surplus is not expected to be heavy, and demand is expected to exceed supplies when the heavy spring demand sets in.

WHITING

Importations of whiting continue large, and are helping to take some of the burden from the shoulders of the producers who have been laboring for some time past to catch up with their back orders. Most of the goods now coming in from abroad are coming direct to consumers in this country. Domestic manufacturers are generally sold up to the limit for current production and are not looking for any additional business at this time. Spot and prompt shipment prices are firmly maintained.

BARYTES

The market is in an unsettled condition, with producers inclined to advance their prices, which at the present time are on a nominal basis in all quarters. Demand is improving steadily, the volume of new business coming as a surprise to many in the trade. Shipments from producing sections are improving, the car shortage being made up steadily. Manufacturers of blanc fixe are in the market for all of the crude barytes obtainable, these supplies being needed to keep up the output of blanc fixe.

DRY COLORS

The demand for blacks has been generally quiet along routine lines for some time past, the market being in a nominal position. Buying of dry colors of all descriptions has been quiet during the past fortnight, but producers are making an effort to sustain the market by putting out supplies in small quantities only. Consignments of colors are finding their way on the re-sale market however, and these latter offerings are an element of weakness. Blues hold quiet, iron blues having dropped in price during the fortnight. Browns are holding steady. Reds have held quiet, with English vermillions off. Foreign stocks are still coming into the market in small quantities, but the bulk of imports are coming in on consignment direct to consumers.

ZINC OXIDE

Lack of buying by the automobile industry has taken the edge off the demand for this product, but the producers assert that there are no surplus materials on the market, despite the many offerings

of re-sale lots of zinc oxide reported in brokers' hands. Producers are keeping the market on a firm basis, and are not offering stocks in heavy volume, preferring to hold back shipments of oxide rather than overload the market and make for a sharp break in prices later on. Some hopes are being expressed for the re-entry of the rubber industry into the market.

CRUDES

Export demand for benzol continues keen, and producers are doing an active business. Re-sale stocks are to be had at 35 cents per gallon. Naptha is well held at 30 cents per gallon. Toluol is unchanged at 35 cents. Developments in the general market for crudes have been few during the past fortnight, and the market is in an unsettled position.

INTERMEDIATES

Aniline oil is showing further weakness, being offered at 27 cents per pound. Supplies are liberal and demand slow. Benaidine is also easier, offering at $1.25 for base and $1.05 for sulphate. Benanapthol is offering in liberal lots on the spot market and the market is weaker, some offering down to 50 cents per pound. Dimethylaniline holds about steady. Paraphenylenediamine holds quiet and unchanged, the market being in a nominal position on spot offerings.

Current Prices for Chemicals, Fillers, Colors, etc.

Acetone, carlots	lb.	.21 @	.22
smaller lots	lb.	.22 @	.23
Acetanilid, C. P., bbls.	lb.	.45 @	.50
Acids, Acetic, 56 per ct.	cwt.	8.40 @	9.15
Carbolic, C. P.	lb.	.12 @	.20
Muriatic, 20 deg.	cwt.	2.25 @	2.75
Muriatic, 22 deg.	cwt.	3.00 @	3.25
Nitric, 42 deg.	cwt.	8.00 @	8.25
Nitric, 40 deg. cwt.		7.25 @	7.75
Sulphuric, 60 deg. car lots	tons	18.00 @	—
Sulphuric, 60 deg. car boys		22.00 @	—
Tartaric, crystals	lb.	.71 @	—
Aluminum Silicate		Nominal	
Aniline oil, bulk basis Contract		— @	—
Imported		Nominal	
Domestic		.27 @	.30
Antimony—			
Oxide	lb.	.14 @	.15
Sulphuret, red	lb.	.22 @	.25
Sulphuret, golden	lb.	.28 @	.30
Sulphuret, crimson	lb.	.45 @	.50
Alcohol, denatured, 190 proof		1.06 @	1.08
Wood, 95 per cent.		2.70 @	2.75
Ethyl, 190 proof		5.65 @	5.70
Aldehyde Ammonia		Nominal	
Ammonia, powdered		.17 @	.17½
Ammonium Carbonate, domestic	lb.	.16 @	.16½
Amyl Acetate	gal.	4.10 @	4.15
Anthracene, 80 per cent.		1.00 @	1.10
Anthroquinine, 95 per ct.		2.50 @	3.50
Asbestine		Nominal	
Asphaltum, Egyptian	lb.	.20 @	.25
Domestic	ton	.30 @	.40
Barium, dust		— @	—
Sulphide	lb.	— @	—
Barytes, prime white imported	ton	Nominal	
white, domestic	ton	35.00 @	40.00
off-color, domestic	lb.	20.00 @	30.00
Southern, f. o. b. mills.		23.50 @	25.00
Western, f. o. b. mills.		23.50 @	26.00
Beeswax		.23 @	.58
Benzidine Base	lb.	1.25 @	1.30
Benzol, 90 per ct.		.33 @	.38½
Benzol, pure bulk, 100		.35 @	.40½
Blanc Fixe, dry, bbls.	lb.	.06 @	.06½
Burgundy Pitch, dom.	lb.	.08 @	.10
Foreign		.60 @	.65
Blacks, Drop	lb.	.05½ @	.15
Ivory	lb.	.16 @	.30
Carbon, gas, cases	lb.	.12 @	.30
Lampblack, R M.	lb.	.12 @	.40
Mineral blacks	ton	35.00 @	45.00
Blues, Prussian		.90 @	.95
Soluble	lb.	.90 @	1.00
Ultramarine	lb.	.15 @	.50
Browns, Umber, Turkey, burnt powdered	lb.	.05½ @	.07
American, burnt	lb.	.04½ @	.06
Cadmium, sulphide, yellow	lb.	1.75 @	2.00
Carbon, Disulphide, bulk	lb.	— @	—
Bisulphide	lb.	.08½ @	.09
Casein, C. P.	lb.	.35 @	.36
Castor Oil		.14½ @	.16
Caustic Soda, 76 per ct.	cwt.	4.15 @	4.35
Chalk, precipated, extra light	lb.	.05½ @	.06
heavy	lb.	.04½ @	.05
China clay, domestic	ton	10.00 @	20.00
imported	ton	19.00 @	25.00
China Wood Oil, bbls.	lb.	.17 @	—
F.o.b. Pacific Coast		.14¾ @	—
Chloroform, U. S. P.		.43 @	.45
Coal Tar Pitch		— @	—
Cottonseed Oil, crude f.o.b. mills	lb.	10.25 @	—
Prime summer yellow	bbls.	13.00 @	13.50
Dimethylaniline	lb.	.90 @	.93
Elateron		— @	—
Formaldehyde, spot	lb.	.27 @	.40
Fullers Earth, powd., carload lots		17.00 @	—
Fossil flour	lb.	.03¾ @	.05
Genasco Mineral Rubber		— @	—
Gilsonite	ton	55.00 @	65.00
Glue, extra white	lb.	.35 @	.45
medium	lb.	.30 @	.35
low grade		.22 @	.26
foot stock		.19 @	.22
brown foots		.19 @	.22
common bone		.18 @	.21
Glycerine, C. P. (drums)	lb.	.26 @	.27
cans		.28 @	.29
Graphite, flake (bbl.)	lb.	.14 @	.20
powdered (bbl.)	lb.	.05 @	.10
Green, chrome, R. M.	lb.	.42 @	.70
Ground glass (fine)	lb.	.03½ @	.04
Hexamethylene	lb.	1.95 @	—
Infusorial earth, powd'd.	lb.	.02 @	.035
bolted	lb.	.035 @	—
Iron oxide, red, reduced grades	lb.	.13 @	.15
red, pure, bright	lb.	— @	—
Hexamethyenetetramine	lb.	2.25 @	2.50
Kaolin		— @	—
Lime, hydrated		— @	—
Lead, red, dry (casks)	lb.	.12¼ @	.12½
sublimed	lb.	— @	—
white, basic carb.	lb.	.10½ @	.11
white, basic sulp.	lb.	.10 @	.10¼
Lime flour	lb.	— @	—
Litharge (casks)	lb.	.11¾ @	.12¼
English	lb.	— @	—
Lithopone, domestic, bbls.	lb.	.07¾ @	.08
in bags	lb.	.08 @	.08¼
M. R. X.		— @	—
Magnesia, carbonate	lb.	.18 @	.19
calcined light	lb.	.60 @	.65
Magnesite, calcined, pwd.	ton	50.00 @	65.00
Magnesia, Oxide, heavy		— @	—
Light		— @	—
Extra light		— @	—
Napthalene	lb.	.12½ @	.15
Nirobenzol		.14 @	.15½
Naphtha, motor gasoline, (steel bbls.)	gal.	.31 @	—
68 @ 70 degress (steel bbls.)	gal.	.38 @	—
70 @ 72 degrees (steel bbls.)	gal.	.39 @	—
73 @ 76 degrees (steel bbls.)	gal.	.41 @	—
machine (steel bbls.)	gal.	.50 @	—
Oil corn, crude factory	cwt.	12.76 @	—
corn, ref. (bbls.)	cwt.	16.26 @	—
linseed, (bbls.)		1.09 @	1.12
In carloads, spot		1.07 @	1.19
tank cars		1.00 @	—
Oil palm, Lagos	lb.	.10 @	—
Niger		.09½ @	—
pine, yellow	gal.	1.00 @	—
distilled	gal.	1.25 @	1.35
rapseed, refined	gal.	1.30 @	1.45
rapseed, blown	gal.	1.60 @	—
rosin, first rectified	gal.	.74 @	—
second run		.77 @	—
tar (commercial)	gal.	.38 @	.40
Oleum Acid, 20 per ct.	ton	28.00 @	30.00
Orange mineral, Amer.	lb.	.15½ @	.16½
imported	lb.	Nominal	
Ozokerite		Nominal	
Paraphenylenediamine	lb.	2.60 @	2.70
Petrolatum, bbls., amber	lb.	.08 @	—
pale yellow	lb.	.07½ @	.08½
Paranitrosodimethylanaline		— @	—
Parafin, refined, 118 @ 120 m. p.		.10¾ @	.11
127 @ 129 m. p.		.09¾ @	.10¼
137 @ 140 m. p.		.11 @	.11½
Phenol		.12 @	.16½
Pumis		.05 @	.10
Pine tar kiln	bbl.	15.00 @	—
Pitch	bbl.	12.00 @	—
Plaster of paris	bbl.	4.25 @	5.00
Red Tuscan	lb.	.22 @	.35
red (American)	lb.	.12 @	.16
Indian (English)		.14 @	.18
Standard	lb.	— @	—
Rosin (common to good)— 280 lbs.		12.45 @	—
Rotten stone, powdered	lb.	.02½ @	.04½
Rubber, substitute, black	lb.	.13 @	.17
white	lb.	.15 @	.24
brown	lb.	.20 @	.25
Rosin Oil, first rectified		.69 @	—
Second rectified		.72 @	—
Third rectified		.88 @	—
Fourth rectified		.94 @	—
Soda ash, light 58 pct.	cwt.	2.65 @	2.85
Sodium Nitrite ..96@98 pct.		.16 @	.17½
Solvent Noptha, crude, hvy.		.30 @	.35½
Soya Bean Oil, bbls.	lb.	.12¼ @	.13
Sellers, tanks, f. o. b. Coast		.08¾ @	.09
Stearic Acid, single		.18½ @	—
Shellac, fine orange	lb.	Nominal	
Sulphur Chloride, drums		.06½ @	.16
Shellac T. N.	lb.	.92 @	.95
Bleached, ordinary	lb.	.85 @	.95
Bleached, bonedry	lb.	1.05 @	1.10
Silex (silicia)	ton	25.00 @	40.00
Soapstone, powdered	ton	15.00 @	20.00
Starch, corn, powd.	cwt.	4.23 @	4.81
pearl		4.08 @	4.66
Jap potato, duty pd,	lb.	.06¾ @	—
Sulphur, crude	ton	— @	—
100 pounds		— @	—
roll		3.45 @	—
commercial superfine		2.10 @	2.35
Talc, American	ton	18.00 @	20.00
French	ton	30.00 @	—
Thiocarbanilid		— @	—
Toluol, pure, in drums	gal.	.35 @	.40½
commercial		.30 @	.32
Tripolite earth	lb.	.01½ @	—
Turpentine, pure gum— spirit	gal.	1.25 @	—
wood	gal.	1.18 @	1.22
Venice, artificial	gal.	.15 @	.16
true		3.25 @	3.30
Vermilion, English	lb.	1.55 @	1.60
American		.25 @	.30
Vorite		Nominal	
Wax, beeswax, crude yel.	lb.	.24 @	.26
refined		.31½ @	.32
Bayberry		.37 @	.39
ceresin, white	lb.	.15 @	.16
yellow		.14 @	.15
Whiting, commercial	cwt.	1.40 @	—
Gilders Bolted		1.45 @	—
Paris white, Amer.	cwt.	1.75 @	—
English cliffstone	cwt.	2.00 @	—
Xylol (gal.) pure		.45 @	.50½
Commercial		.30 @	.35½
Zinc Oxide, French process, red seal		.11½ @	.11¾
green seal		.12½ @	.12¾
white seal		.13½ @	.13¾
Leaded Grades— Commercial, lead free		.09½ @	.10
5 per ct. lead sulphate.		.09 @	.09½
10 per ct. lead sulphate		.08¾ @	.09¼
20 per ct. lead sulphate		.08½ @	.09
35 per ct. lead sulphate		.08¼ @	.09½
Zinc Sulphate		.03½ @	.04½

Crude Rubber

NEW YORK, OCT. 21, 1920

Crude rubber has displayed a very easy tendency in the local market during the past fortnight, and despite the very low levels which have been reached on some varieties, there are no indications that the bottom has yet been reached. Fractional declines are reported from day to day, and the market is being driven to still lower levels without effecting any improvement in the demand.

Much of the buying now being done is for the account of the manufacturers of druggists' sundries, and buying for this branch of the manufacturing industry is not of a quantity sufficient to serve as a buoy to prices. The importers want a resumption of buying on the part of the rubber tire manufacturers, but no hopes are held as yet out for any early consumation of this wish.

Importers who are in close touch with the situation say that the outlook is a little brighter, and predict a picking up in business conditions some time after the

beginning of the new year, most factors looking for an improvement some time during February or March. The present period of depression is being gradually accepted as a natural reaction from war conditions.

Tire manufacturers are letting a little crude come forward now on contract deliveries, but are not inclined to stock up to any great extent at the present time. Current low prices have brought some of the manufacturers back into the market for future goods, but others figure that the market cannot strengthen unless it is given their buying support, and argue that the longer they hold off, the cheaper the crude stock is likely to be. At any rate, they point out, there is nothing to be lost by holding off the market, as there is no immediate need for the rubber, while there is everything to be gained by still lower prices, as the tire maker who buys his raw materials cheapest will be able to give his consumers a tire made from good materials just a little bit cheaper than "the other fellow," when manufacturing once more gets under way under normal conditions.

Prices have declined on several grades of rubber during the fortnight under review, but the market is really in a nominal position for all varieties, spot values fluctuating erratically, according to the financial condition of the holder. Some forced sales of rubber are reported to have been put through at prices even under those now ruling on spot goods, but this underselling has not yet become general. There are heavy stocks of rubber in the New York market which cannot be moved until tire makers once again begin buying.

Ceylons			
Smoked sheets ribbed, spot	.23¼	@	—
Smoked sheets ribbed, Nov.-Dec.	.24	@	—
Smoked sheets ribbed, Jan.-June	.28	@	—
Smoked sheets plain, spot	.19	@	—
First latex pale crepe	.25	@	.25½
Amber crepe, No. 1	.19½	@	—
Amber crepe, No. 2	.18½	@	—
Amber crepe, No. 3	.17½	@	—
Clean brown crepe	—	@	—
Light clean brown crepe	Nominal		
Roll brown crepe	.17	@	.17½
Grand Central crepe	.19	@	—
Africans			
Rio Nunez string	—	@	—
No. 1 Benbuella	.12	@	—
No. 2 Benguella	.08	@	.10
Paras			
Up-river fine	.25	@	—
Up-river medium	.21	@	—
Up-river coarse	.16	@	—
Caucho ball	.17	@	—
Islands fine	—	@	—
Maderia fine	.30	@	—
Knapsack	.38	@	—
Centrals			
Corinto prime	.14	@	—
Esmeralda prime	.14	@	—
Miscellaneous			
Guayule wet	Nominal		
*Balata block Panama	—	@	—
Balata sheets	.70	@	—
Cameta	.17	@	—
Palembang	.08	@	.08½
Prime Surinam sheets	.34	@	—

*Nominal

Scrap Rubber

NEW YORK, OCT. 21, 1920

This market is in a waiting attitude and all factors are looking for some turn in the situation which will lead to more active buying on the part of the users of reclaimed stock. The much talked-of fall buying movement is now overdue, but there are no signs of any great buying movement, stocks of scrap continuing to move slowly in a routine manner as heretofore.

Most of the trading being done at the present time is in the nature of speculative buying and selling by various factors in the trade, buying for the account of the reclaimers being negligible at the moment.

Supplies continue to accumulate in the hands of the wholesale buyers, and the movement of goods into these jobbing hands continues to be virtually unchecked despite the falling market for all varieties. Prices during the past fortnight have remained stationary. There have been no developments which would warrant an upward revision, and prices could hardly be reduced further unless the wholesalers were to give their stocks away.

	Cents per Pound.		
Solid Tires	1.50	@	2.00
Auto Tire Peelings	2.50	@	2.75
Truck Tires	2.00	@	2.25
Black Rubber	1.50	@	2.00
Boots and Shoes	5.75	@	6.00
Arctics, trimmed	4.25	@	5.00
Arctics, untrimmed	4.00	@	4.12½
Tire—Automobile	1.25	@	1.50
Bicycles, pneumatic	1.00	@	1.50
Mixed Hose	.50	@	1.00
Air Brake	1.50	@	—
Inner Tubes, No. 1	8.00	@	8.50
Inner Tubes, No. 2	5.50	@	6.50
Red Tubes	4.00	@	5.00

American Rubber Patents

ISSUED SEPTEMBER 28, 1920

1,353,921—To George C. Lehr, St. Louis, Mo. Vehicle-tire.

1,353,943—To Albert L. Anderson, Spokane, Wash., assignor one-fourth to James F. Mazna and one-fourth to George B. Shafer, Spokane, Wash. Demountable rim.

1,354,123—To William Edgar Muntz, London, England. Treatment of vulcanized india rubber goods embodying a foundation fabric.

1,354,161—To Willma N. Booth, Detroit, Mich. Demountable-rim support for motor vehicles.

1,354,174—To Henry Dech, Trenton, N. J., assignor to Mercer Tire Co., Trenton, N. J. Method of making inner tubes.

1,354,227—To Albert R. Thompson, Detroit, Mich. Tire-mold.

1,354,304—To Benjamin Jendryke, San Francisco, Calif. Resilient wheel.

1,354,363—To Gilbert N. Widenhofer, Butler, Pa. Combined resilient tire and mounting.

1,354,392—To Morgan A. Greene, Rupert, Idaho. Resilient tire.

1,354,411—To Eugene Y. Malone Mobile, Ala. Automobile-tire.

1,354,425—To Thomas Sloper, Dorizes, England. Manufacture of pneumatic tires.

1,354,431—To William Clendenning ,Philadelphia, Pa. Tire.

1,354,449—To James R. Wood, Indianapolis, Ind. Tire.

1,354,457—To Don O. Nation, Hollywood, Calif., assignor one-half to William E. Nation, Los Angeles, Calif. Tire-spreader.

1,354,459—To Carl Gustaf Alfred Backdahl, Stockholm, Sweden, assignor to United States Tire Company, New York, N. Y. Expansible core for india rubber articls.

ISSUED OCTOBER 5, 1920

1,354,468—To Walter E. Copithorn, Natick, Mass. Demountable rim.

1,354,520—To Burton P. Stedman, Peoria, Ill. Tire.

1,354,595—To Emil Borman, Chicago, Ill. Tire-rebuilding device.

1,354,691—To Andrew D. Rozeboom, Bowman, N. D. Tire structure.

1,354,774—To Myer Metzger, Chicago, Ill. Display-holder for tires.

1,354,846—To James Robertson, Jr., Weehawken, N. J. Repair-patch for rubber footwear.

1,354,849—To Jesse Schmidt, Tracy, Calif. Tire-tread puller.

1,354,984—To Thomas J. McCaffery, Seattle, Wash. Tire.

1,354,992—To Emil Nestler, Bergenfield, N. J. Process of retreading rubber tires and product thereof.

1,355,011—To John D. Sullivan and Harry L. Fry, New Castle, Pa. Resilient tire.

1,355,027—To William P. Bell, State College, Pa. Anti-skidding device.

1,355,042—To Walter Frank Harwood, Richmond, Va. Tire-shipping crate.

1,355,056—To Alex Lehoczky, Detroit, Mich. Non-skid tire-armor.

Rubber Imports for September

Statistics recently issued by the Rubber Association of America, Inc., relative to crude rubber importations during September show a falling off as compared to September 1919. Importations for the month just past totalled 11,636 tons while those for September, 1919, were 14,036 tons. Total importations for the nine months ending September 30, 1920, were 192,973 tons, an increase over the corresponding period for 1919. Following are the statistics in detail:

PLANTATIONS

FROM	TONS
Rotterdam	34
London	466
Manila	40
Zamboanga, P. I.	5
Singapore	6,808
Pt. Swettenham	27
Colombo	604
Belawan-Deli	600
Batavia	860
Malacca	5
Sourabaya	729
Tandjong Priok	11
Telok Anson	10
Penang	604
Pt. Dickson	17
Japan and others	154
	10,974

MANICOBA AND MATTO GROSSO

Manicoba	22

AFRICANS

FROM	TONS
Havre	51
Antwerp	46
Africa	2
	99

CENTRALS AND GUAYULE

Centrals (Mexico and Central America)	8
Guayule (Mexico) By Rail Eagle Pass	74
	82

PARAS

Manaos	208
Para	251
	459

GUMS, WASTE RUBBER, ETC., IMPORTED FROM VARIOUS SOURCES

	TONS
Waste	218
Balata	44
Miscellaneous Gums	516

COMPARISON 1919—1920

	Sept. 1919	Sept. 1920	Total Importations 9 months ending, Sept. 30th 1919	1920
Plantations	10,143	10,974	131,853	172,802
Paras	3,423	459	20,060	14,973
Africans	312	99	2,036	3,756
Centrals	51	8	1,135	673
Guayule	11	74	1,453	734
Manicoba and Matto Grosso	96	22	259	35
	14,036	11,636	156,796	192,973

ARRIVALS PLANTATIONS FOR SEPTEMBER, 1920, SHOWING PORTS OF ORIGIN AND ARRIVAL

FROM	ARRIVED AT	TONS
Singapore	New York	6,736
Singapore	San Francisco	32
Singapore	Seattle	40
Penang	New York	604
Batavia	San Francisco	20
Batavia	New York	840
Manila	San Francisco	40
Zamboanga, P. I.	New York	5
Sourabaya	New York	729
Japan and others	Seattle	38
Japan and others	San Francisco	40
Japan and others	New York	76
Tandjong Priok	New York	11
Colombo	New York	544
Colombo	Boston	60
Malacca	New York	5
Belawan-Deli	New York	600
Port Dickson	New York	17
London	New York	466
Telok Anson	New York	10
Port Swettenham	New York	27
Rotterdam	New York	34
		10,974

ARRIVALS OF PLANTATIONS BY PORTS

Atlantic Ports		
New York	10,704	
Boston	60	
		10,764
Pacific Ports		
San Francisco	132	
Seattle	78	
		210
		10,974

NATIONAL U.S.A. QUALITY

We specialize in intermediates of the highest quality, carefully and scientifically produced for the manufacture of

RUBBER

The "National Quality" trade mark is your safeguard

Intermediates Division

National Aniline and Chemical Co., Inc.

21 BURLING SLIP NEW YORK

RECLAIMED RUBBER

THAT HAS STOOD
THE TEST FOR YEARS

Special GRADES for the following TRADES:

INSULATED WIRE
BOOT *and* SHOE
MECHANICAL -- AUTO TIRE
PROOFING
HARD RUBBER

We will cheerfully furnish samples upon request

Somerset Rubber Reclaiming Works

NEW BRUNSWICK, N. J.
Factory—East Millstone N. J., Somerset County

BINNEY & SMITH CO.
BLACKS OF SUPERIORITY

TWO FACTS OF IMPORTANCE

1. By far the greater part of the tires manufactured today carry black treads.
2. The great majority of such tires are made with our special blacks.

Interesting particulars on request
Headquarters for all black pigments

Binney & Smith Co.

81 FULTON STREET NEW YORK